

STAMIGA

FORMAT

The complete package for Atari ST and Commodore Amiga owners

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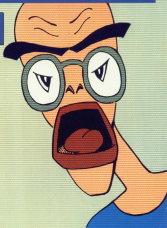
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MENACE



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DATE: JANUARY 1997

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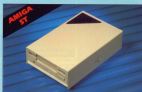


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**ST-AMIGA
FORMAT
ISSUE 3
NOVEMBER 1988**

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ST-AMIGA FORMAT

The complete package for Atari ST and Commodore Amiga owners

	NEWS	7		SPECIAL OFFERS	86
	The shape of things to come, as seen at the latest PC show. All the latest news, plus new arrivals at the gamers' fair.			More bargains than Galt's stall - and yourself at the Format stall's contents.	
	PIXEL PUNCHERS	13		ST PD	22
	Today's top computer graphics, from 5 to and Amiga to Clay. We put the best shots.			A handpicked selection of the best new 512 Public Domain utilities to come our way.	
	ST BLITTER BOOST	20		LETTERS	93
	Surcharge your ST by adding a blitter chip. A photo-by-photo guide to the most effective upgrade, plus HiSoft's 'software blitter'.			The good strikers' tales, and do just a jangle! again. Read up for some incomes.	
	AMIGA MIDI INTERFACE	24		ESCAPE SEQUENCE	98
	Build your own Amiga MIDI interface and save yourself pounds on cheap prices.			Could this be the end of Format as we know it? Well, until next time anyway.	
	GOLD DUST	91	GAMES		
	Shine Gold dust down the hottest games and richest markets for ST and Amiga.			47	
	DISK EXTRA	67		SCREEN PLAY	
	For you too! See software fully playable games. Reviews for the ST and Amiga, as well as our round-up of games and reviews for all titles.			this month's Format Gold award goes to the superb graphics of <i>Blade</i> . Also sample the wonders of <i>Stargate</i> , <i>Purson</i> and all the month's top releases.	
				56	
			GAME BUSTERS		
				The biggest games cracked. <i>Blade</i> and <i>Purson</i> lead team, plus a planning table-your-own map kit for <i>Dungeon Master</i> .	

GRAPHICS



CARTOON CAPERS

You don't need £1000 worth of hardware and software to create great pictures – just a little know-how. Learn the inside secrets of the cartoonist's trade.



REVIEWS



SPRITE FACTORY

17

CBM's new ST sprite designer can animate faster than the fastest team's hand-drawn.



ANIMATION: FLIPPER

18

A neat little animation prototype for the Amiga. String those pics together and make them fly.



ROBOKIT

74

Eat your heart out CIOFO – robotics is fun on the ST, with this brand new controller package.



LIGHTS! CAMERA! ACTION!

The ultimate Amiga slide show program arrives – mix music with some amazing video-effects and run your own art show.



DTP UPDATE

43

Reviews of the latest versions of Shakespeare (Amiga) and Timesaver (STP-ST).

EUROPE ONE, USA NIL?

Normally we're used to reading stories in the press about how this or that superb British innovation has been woefully neglected by the government, and the inventors have wandered off down the back drain to the US of A to find fame and fortune.

With the Amiga and the ST, Europe is finding itself in a rather ironic situation – we're picking the best the States has to offer!

Consider the facts: in 1985, the dominant machines over here were the Sparcy and 64, in America, Atari and Commodore were preparing to launch their 16-bit supermachines in an unimpressive world.

To start with, Europe were the poor relations. We gaped at the graphics and gaped at the games, but the machines were in very short supply; all the software dribbled over the Atlantic when they could spare it,

and then at extortionate prices.

But now it's all changed. The ST largely topped in America, and the Amiga has virtually become a specialist graphics workstation. But over here they're flourishing; there are probably more STs in the UK than in the States, and Commodore dominates the German and Scandinavian markets totally.

What does all this mean? It means more software for us, better support, better supplies and lower prices, because at long last programmers over here are getting to grips with the machines. Electronic Arts have released *Fusion*, their first all-UK game, this month.

With a worldwide user base of over a million between them, the future for the ST and Amiga looks pretty rosy. And that can't be bad.

MUSIC



SELL YOURSELF!

34

Make money from your music – Chris Jenkins explains how to record your compositions, and what's out there just waiting to buy what you do.

TECHNOPHILE



AMIGA TOOLS

77

Reviews of *Cygnus Professional* and *Wired* – two tools which are the revolution in your Amiga's programming environment.



LEARN BASIC

80

Part 4 of our teach-yourself series gets to grips with tedious data handling – arrays and more.



DESKTOP

82

Entry forbidden to all Amiga owners – here's where the ST's innermost secrets are revealed.



WORKBENCH

84

Strictly not for ST owners – icons, GUI commands and a host of uniquely useful tips.

Devpac Amiga Version 2

The Best just got Better!

Deepac Amiga has always been the popular choice for assembly language programming on your Commodore Amiga. When it passed its second birthday we took a fresh look at it and realised there were a few things it didn't do that we, and you, wanted it to. So we re-wrote both the assembler and debugger totally from scratch, allowing us to add features that were not possible in the original versions. We then substantially improved the editor as well to give us an unbeatable combination of features - see the table.

The Editor - true integration

The last editor is based on the original but with serious file block highlighting, a file requester and the ability to make backups of your sourcefiles. The assembler and debugger are both available, instantly, at the press of a key.

The Assembler - no waiting zone

GenASM was always fast but the all-new algorithms means it's even faster, particularly on larger programs. It handles multi-block code, 100-character significant labels, local labels, improved macros & conditionals, generates directly relocatable, or relocatable code, and a stand-alone version is included so you can use a CLI, a batch file or an alternative editor.

The Debugger - kills bugs, dead

How many times do you write a completely bug-free program? Trying to debug a program by looking at guru numbers is what some development systems leave you to do. We include a disassembler/monitor/debugger called MonASM, which uses its own screen display, listing your program's output as it is. It has a range of different types of breakpoints including count and conditional breakpoints. For example you can stop after the 34th call to printf or stop if the contents of mem_ptr become odd. You can also break into runaway programs, or you can even view your source-code files from within the debugger and use multi-block program symbols.

Ideal for Beginners & Enthusiasts

The editor is fast and easy to use, you can assemble from memory to memory then execute it repeatedly to try your ideas out, all without a disk access. Press a key and you're straight into the debugger, you can even debug programs assembled in memory with their original symbols. No listing is required - the assembler can generate directly relocatable programs immediately, followed by linking somebody else's code, such as the BIOS! - with the debugger you can disassemble to disk with automatic labels, including system calls. All programs will work on a 60 column display.

Ideal for Professionals

If you're not using Deepac for software development then you'd better hope that your code isn't either. Why wait for your editor to load a file or for your assembler to churn through it - GenASM is the fastest professional assembler available and is fully source code compatible with the MOC assemblers. We write in 68000 assembly language every day so we understand what you need.

Ideal for You

Just compare the specification with any other product and we're sure you'll agree

Devpac Amiga 2 - There is No Competition

	Devpac 1	Devpac 2	Devpac 2	Devpac 2
Screen Editor	Y	N	N	Y
Handles tabs on single chain	Y	N	N	Y
Jump through assembly errors	Y	N	N	Y
Automatic backups	N	Y	N	Y
Integrated assembler	Y	N	Y	Y
Integrated debugger	N	N	Y	Y
Macro parameters	10	10	N	20
Multi-line macro calls	N	N	N	Y
Conditional assembly	Y	Y	N	Y
Case Insensitive	N	N	N	Y
Local labels	Y	N	Y	Y
Relocatable, relocatable code	Y	Y	N	Y
Linkable code	Y	Y	N	Y
Multi-Block I/Os	N	Y	N	Y
Int-LINK binary files	N	N	N	Y
Assemble to memory	N	N	Y	Y
Stand-alone assembler	Y	Y	N	Y
Session types	Y	N	N	Y
Debugger supplied	Y	N	Y	Y
Disassembler	Y	N	Y	Y
Multi-window	N	N/A	N	Y
Screen mode viewing	N	N/A	N	Y
Single-step	Y	N/A	N	Y
Breakpoints	Y	N/A	N	Y
Conditional breakpoints	N	N/A	N	Y
Full expression evaluator	N	N/A	N	Y
Multi-screen	Y	N/A	N	Y
Break into running programs	Y	N/A	N	Y
Disassemble to disk	N	N/A	N	Y
Example program source code	Y	Y	N	Y
Operating System Libraries	Y	Y	N	Y
Version	1.0	1.1	1	2.0

Please send me the following for my Amiga:

☐ HiSoft Devpac 2 @ £28.00
☐ Aster C Developer @ £175.00

Please send me the following for my Atari ST:

☐ TWRST @ £28.00
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☐ Power BASIC @ £40.00
☐ Aster C Professional @ £125.00
☐ Aster C Developer @ £175.00
☐ Snapshot version 2 @ £50.00
☐ Personal Pascal 2 @ £75.00
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☐ TurboST hi software editor @ £25.00

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PC SHOW BRINGS 'EM IN

The 1988 Personal Computer (PC) Show duly came and went at Earls Court, running from 14th to 18th September. ST Amiga Forum were there in force, both manning our stand to meet you lot, and sniffing out the newest product announcements.

Desktop Video for Amiga

Commodore are to release a video editing kit later this year, based around the Amiga 4860 and priced at below £100.

At last the potential of the Amiga's graphics hardware looks set to be realised, and with over a million video recorders in homes around the UK this could be a winning marketing strategy for Commodore.

The idea is that you can link up your Amiga to a domestic video recorder and use it to edit and mix in computer graphics with conventionally recorded images. Applications range from adding captions and labels to grainy on-film footage, right up to directing your own video.

Until now you needed to buy a special piece of hardware called a "Genlock" at around £250 to make the Amiga's video recorder link work, but Commodore have worked out a cheap deal with Apple Systems and Peripherals to build a suitable unit.

Software bundled in the kit will let Family TV Show and TV Test Bars flourish. Sales Director at Commodore reckons the price of this will be £499.95, which looks pretty good value.

Record companies of the

world can now cringe at the prospect of receiving phone orders, alongside demo tapes!

16-bit shock!

Blimey! Listen to this for a spec for a brand new price/performance-beating 16-bit wonder-machine:

- 51.2K of RAM expandable to a meagre 640K maximum
- Speaker with volume control, capable of producing both quiet beeps and loud beeps (see line only)
- Two expansion slots
- Standard graphics mode displays has a dazzling 4 colours
- Price with colour monitor: a snip at £173.99 inc. VAT

"What can this be?" you ask, getting out your chequebook and setting off to place your order at Dixons. Answer: the new Sinclair Professional PC200, from Amstrad, only available at Comet.

The idea is that an IBM compatible games machine will appeal across the spectrum (ho, ho, of business and leisure users, thus selling in millions. Until now, everything Alan Sugar has done has turned to gold. Could this be his last mistake?

After all, even if you run your computer through a TV and do without the monitor the PC200 costs £299 plus VAT: that's £44.85 more than a lot price ST, and £15.75 less than a lot price Amiga. And you can usually find

discounted STs and Amigas, whereas Amstrad models almost invariably stick to their list price.

In short, no regrets for recent ST or Amiga buyers. The sad thing is that Amstrad's slick marketing campaign which will undoubtedly run up to Christmas may well lead some people into a serious rethink.

ST cut official

As revealed yesterday in issue 3 of Forum, Atari want the Show to announce a price cut of £150 on the ST.

A basic 520ST with a 1MB disk drive (this larger size is the only one now available) is down to £299, and there's also the "Super Pack" at £399. This consists of a 520ST bundled with what claims to be £450 worth of software. The final 22 titles chosen by Atari are: *Marble Madness*, *Test Drive*, *Beyond the Ice Palace*, *Baggy Boy*, *Little Edward*, *Super Star*, *Star Wars*, *Thundercats*, *Ranxaus*, *Dragon*, *Quadrant*, *Starquest*, *Chopper 3*, *Roadrunner*, *Xenos*, *Arkavard*, *Michael Black Lamp*, *Comet*, *Thru*, *Second Out*, *Summer Olympics 88*, and one non-game package, *Triangle Organizer* - a software/ideas utility.

Other ST models - 1040 and Mega - aren't changing in price,





but then they didn't go up when the 100 was last Spring. However, the 1040 is now coming with a built-in TV modulator as standard, worth £300 in retail prices.

Atal reckon there are 120,000 STs in the UK at present, and aims to make that 200,000 by Christmas - that's big, guys.

Amiga push

Commodore have been unable to respond in kind to Atari's price cut. After all, they did knock £100 off the Amiga only two months back. However, the incentive to return buyers is that all Amigas sold from November 1st will include a free TV modulator - the widget that used to cost £20.99 that was necessary to link up to a TV.

Commodore's boss Steve Franken admitted that they had thought of doing a games software deal. However, the economics would have pushed the Amiga over £400. "We'd either keep the price of the Amiga down, then include a deal with somebody only two or three really good titles," he said.

Joy for Amiga programmers

HOBI, the prolific source of joy to programmers, have begun to assault the Amiga market in a big way.

Just news is it of a compiler for Amiga BASIC. Due out around the end of October, HOBI Amiga BASIC will cost £69.95. It claims to compile both industry-standard Microsoft BASIC compatible programs and ordinary Amiga BASIC programs unchanged.

HOBI BASIC includes an interactive editor, so you are immediately referred to the correct point in a program when an error is discovered, and programs can be compiled to complete standalone machine code. Not only will they be faster than the standard interpreter, you'll be able to tell your creations at a single clickable icon.



charts also only in first week in the shops. It outlasted all games, displacing Frontier's Riva, the previous week's best seller.

Why did not, for the most expensive hacker, is Zenpac 2 for the Amiga. Version 3, which was released on the ST a couple of months ago but costs £19.95 and features a completely integrated editor-debug suite.

■ **Hault, The Old School, Cambridge Bedford** 0525 708311

Animators' delight

The Amiga's preeminence in computer animation and interactive video continues to grow with new software products.

Top of the range is Order 40 Professional. At £269.00, we feel this is a professional rendering package with a feature list as long as your arm: a projector for measuring angles, isoprotic matrices, mental, glass and mirror textures, the environment, but above all 'moving shading', support for 58000/4000 processors, genlock interfaces, and much more. Anyone who's used to Zenpac 3D will notice the quality to expect from the new version.

Forces in Flight 2 (479.00) and Animation 2.00 are less high-powered packages. As well as the usual animation features, Flight adds you to do 'feature mapping' - mapping an IFF picture around a 3D object. Animation 2 is an Amiga Animator-lookalike, claiming much the same facilities at half the price.

■ **Amiga Centre Scotland, 4 Hopt Street Lane, Edinburgh EH1 3JH** 031 557 4182

Public service

If you're bothered by the vast number of Amiga PD disks out there,

George Thompson Associates are providing what looks to be a good way of finding your feet.

For £6.99 you can get two disks with a complete catalogue of Amiga public domain, covering the Fish, Amiga, MAG and TOSAC libraries, as well as a few special

QUICKIES

- **The ST Club** are expanding - as well as moving premises to Station Place, 40 Stony Street, Nottingham NG1 1LX, they are introducing their first commercial product, **Frontal Plus** costs £19.99 (£18.49 for a substantially disk version) and allows you to edit all GEM or Omega screens and printer fonts.
- **George Thompson Associates** are releasing a tutorial book to sharpen your Amiga art skills. **Professional Results with Deluxe Paint II** is a handbook examined full of hints and tips on basic art techniques, colour cycling, screen photography and more. Cost is £24.95, or £44.95 inclusive of two disks of examples and tutorials.
- **Hi-Torque** (0734 761114) have developed a neat little Amiga hack, allowing you to display 16 colours on your Amiga Monochrome screen. The system takes up 30k of working memory, and comes with new look Editor and Preferences editors. Price £16.



- **Frontier's** new deal brings their Super Hard disks to the Amiga.
- **Frontier** (0423 671403, longtime distributors of Super hard disk drives for the ST, have now clinched the distribution deal for the Amiga Super range too. 20MB, 30MB and 60MB drives are available, the smallest at £649.95-£5000/£43000 and £679.95-£47000.

computations. Also covered is a folder of the popular American magazine-era disk, Jumpstart, in the form of a built-in mouse listing and a sample of its articles, lists, tips and programs.

To what your appetite, the call-along pack includes a fully playable 3D Amiga-style clone game, Octal, complete with 3D space.

You also get a 45-minute videotape against a purchase of

10 or more PD disks normally £3 each - so you stand to make a net gain of 10p on the deal.

■ **George Thompson Associates, Thompson, Dippers, Devils, Arns, 0427 588517/575 82 2741**

Deeply touching

EO Computer's been developed a new way of using your ST. Throw the mouse away, just point to what you want with the new Touchscreen.

EO's touchscreen is a transparent overlay which clips on the screen and plugs into the ST, after which pointing at an item on the screen is exactly equivalent to clicking the mouse button on it.

The screen consists of two facing styler sheets, with a very slight gap. When you touch it, an electrical connection between the sheets is made.

The unit has a resolution of 256 by 256, and costs for £299 inc. VAT. You'll never quite match the mouse for pinpoint-accurate clicking ability, but EO's system it will go down a storm with physically handicapped users, schools and others who need to give demonstrations to an eager audience.

■ **EO Computer Exhibition Centre plc, 2nd Floor, Glenamagh House, David Street, Cardiff CF1 2JH** 0222 266285



EO Touchscreen

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10. **RESEARCH DESIGN** The study was a descriptive, cross-sectional study. The study was conducted in the form of a survey. The study was conducted in the form of a survey. The study was conducted in the form of a survey.

Account	Debit	Credit
Accounts receivable	100.00	
Accounts payable		100.00
Inventory	100.00	
Prepaid expenses	100.00	
Equipment	100.00	
Accumulated depreciation		100.00
Land	100.00	
Buildings	100.00	
Depreciation expense	100.00	
Interest expense	100.00	
Income tax expense	100.00	
Retained earnings		100.00
Common stock		100.00
Preferred stock		100.00
Dividends	100.00	
Salaries expense	100.00	
Utilities expense	100.00	
Insurance expense	100.00	
Advertising expense	100.00	
Transportation expense	100.00	
Interest income		100.00
Dividend income		100.00
Gain on sale of assets		100.00
Loss on sale of assets	100.00	
Net income		100.00
Total	1,000.00	1,000.00

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Statement of Accounts				
2014	2013	2012	2011	2010
Assets				
Current Assets				
Cash	1,000	1,000	1,000	1,000
Accounts Receivable	2,000	2,000	2,000	2,000
Inventory	3,000	3,000	3,000	3,000
Prepaid Expenses	4,000	4,000	4,000	4,000
Other Current Assets	5,000	5,000	5,000	5,000
Non-Current Assets				
Property, Plant, and Equipment	10,000	10,000	10,000	10,000
Intangible Assets	15,000	15,000	15,000	15,000
Other Non-Current Assets	20,000	20,000	20,000	20,000
Liabilities				
Current Liabilities				
Accounts Payable	1,000	1,000	1,000	1,000
Short-Term Debt	2,000	2,000	2,000	2,000
Other Current Liabilities	3,000	3,000	3,000	3,000
Non-Current Liabilities				
Long-Term Debt	10,000	10,000	10,000	10,000
Other Non-Current Liabilities	15,000	15,000	15,000	15,000
Equity				
Common Stock	10,000	10,000	10,000	10,000
Retained Earnings	20,000	20,000	20,000	20,000
Other Equity	5,000	5,000	5,000	5,000

[illegible]

1. *Journal of the American Medical Association*, 2000; 283: 2686-2692.

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Journal of Internal Medicine 255: 103–110

[illegible][illegible][illegible][illegible]



Not-so-Mini Office II

Mini Office II, the staggeringly successful budget software suite which has progressed from BBC through DTP, PDI and PC, is now arriving on platform 5 for the ST.

Comprising a word processor, spreadsheets, databases, communications and graphics editor, the cunningly named Database Software Suite then offers ultimate success will be repeated.

However, they seem to have abandoned the budget ground for a golden image. Paid versions of Mini Office have cost £19.95 (standard CPCL), £29.95 (standard PCML), £49.95 (PG) - but the ST version will be £29.95 per module. That's £149.95 the lot. At £29 or so people are prepared to forgive a few bugs, but it's going to have to be good at £29.5.

■ Database Software, Europa House, Arlington Park, Arlington, Middlefield SA13 4NP (0425 676666)

The shows go on

How many computer shows can you fit into one year? How many angels fit on the head of a pin? If you don't make the PC Show,

don't fret - shows for both ST and Amiga owners are scheduled for November, ideal for picking up those Christmas bargains.

The 12th Official Commodore Show takes place at the National, Hammersmith, between November 16th-20th, closely followed by the Atari Christmas Show at Alexandra Palace from November 20th-23th. Handwriting Database Exhibitions are organising them both, and handwriting personality (like our-elves before...) will be among the crowds at both.

Prime attraction at the Atari Show is a games workshop - if you fancy yourself as a games writer, this could be your chance to make a million. Write your program and take it along to the show, where Mac, Brian, Gail, Madeline/Hugh and Lynette will put you through on design and presentation, or even make you an offer if it's really good.

Meanwhile Commodore are offering prizes in a Christmas Card design competition - take your disks along and win a prize plus special graphics and games rooms with major demos running all the time.

■ Database Exhibitions, Europa House, Arlington Park, Arlington,

Middlefield SA13 4NP (0425 676666)

EEK! It's Mouse Music

Extensoft are setting out to prove that the ST can outplay an Amiga when it comes to sound sampling.

Mouse Music, previewed at the PC Show, is a 4-channel sound sampler and sequencer for the ST. You can get sampling rates of up to 44.1 kHz, which is the same as CD players use. It will take samples in 16-bit mode (native 16-bit CD quality), but can easily be higher quality 17-bit mode. Extensoft plan to create a disk of 17-bit samples for you to edit into your own pieces, but you can't directly sample at 12 bits.

Mouse Music plugs into the cartridge port, and the software can optionally be fitted in ROM, freeing you from carrying disks around with you to live shows.

Mouse music will be sold at £179, or a special deal with a keyboard at £249. A keyboard for £70 doesn't sound bad! First sales are planned for the Atari Show, November 20th-23th.

Amiga owners needn't despair though - a version of Mouse Music is well under way, which will sample on eight channels!



■ Extensoft's Mouse Music board is previewed there at the PC show

■ Extensoft, Unit D7, Royal Mills, Esher, Surrey KT13 6AG (0425 551 742)

A SCANNER IN THE WORKS

The new ways of getting images into your computer were unveiled at the PC show.

The Camera Handy Scanner is a 16-grey scale, 640mm wide digitiser. It looks like a flat scanner, and to use it you place the object to be scanned on a flat surface and sweep the scanner over it.

If your image is more than 640mm wide, you need to do several sweeps and compose the image with a graphics editor.

A key addition is OCR software - Optical Character Recognition. If you scan a page of text, the pixels from the image can be processed



■ The Camera Handy Scanner in action



■ Eye, eye, what's all this then? a sample from Bentley's VCR ST

The 16-grey scale Handy Scanner is available for both ST and Amiga at £343.85 inc. VAT, a cheaper 8-grey scale model black and white only costs £259.85.

Bentley, an exciting new digitiser was on display from Bentley-Vel ST takes black and white images from video cameras in 'real time'. The system it can grab a single 1/50th second image without you needing to freeze the motion.

You can store frames at a claimed rate of 12 per second (16 at 1/10th second) directly into the images, and've grabbed and replace them at up to 25 per second. But the 25 frames can be stored on a 1MB ST. All this for only £399.95! Can it really be true? - yes.

■ Camera Ltd, 126 New Bond Street, London W1Y 6PH (0424 699 2981)

■ Bentley Productions, 207 Rarburn Egg, Livingston EH41 9HW (0506 350462)

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QUEUE FOR ACTION

Bewildered by the billions of new games announced at the PC show? Andy Storer battled through the crowds to find the truth behind the hype, and presents the best of the month's upcoming games on ST and Amiga.

LORDS OF THE RISING SUN

Comesaweeny/Mirrosoft
Amiga & ST ■ £79.95



The follow-up to Defender of the Crown and Comesaweeny's most ambitious project to date is a real-time arcade adventure set in 13th century Japan with you in command of war armies of Samurai. Taking on Ninja is an all-out attempt to become Shogun. As you might expect, the interactive graphics and animation are going to be out of this world.

PIONEER PLAGUE

Mindbender ■ Amiga only ■ £19.95

Proudly announced as 'the world's first 4,000 colour mode game', Pioneer is the only game to date developed using the Amiga's 16M graphics capability and comprises eight directional running, digitised speech and clever music. You're after a self-replicating, terrorising robotic probe that's got its wires crossed in a mix of multi-level arcade/strategy. The type-fast tactical sequences have to be seen to be believed.



■ PIONEER PLAGUE

DAMOCLES

Norwegian ■ ST & Amiga ■ £79.95

Despite rumours that the '86 PC Show demo was so different from the one at '87, the follow-up to Mercury will be out by Amiga, Apple. After leaving Tang you make it to the Gamma planetary system where the comet Damocles is about to smash down. And yes, it's up to you to avert disaster. Regrettably with 50 times more data than its predecessor, Damocles features fast solid 3D graphics.

AFTERBURNER

Mediaspace ■ ST & Amiga ■ £24.95

Argonauts Starblazer 2 team bring you this compressed clone after stripping down the 5 Megabytes of the number one arcade game of the year to deliver a fast and furious 3D assault. There is stores FX and you're left with a superlative delight that aims to capture the thrills and spills of the original. Can you believe it's also out on the Spectrum!



■ AFTERBURNER

ROCKET RANGER

Comesaweeny/Mirrosoft
Amiga only ■ £29.95

It sounds like a Sunday Sport story: the Nazis win World War Two, then hang out on the moon manufacturing deadly bombs. A bunch of scoundrels from the future send you a rocket suit, a city gun and a secret decoder wheel in the mail, whereupon you set off to rescue your childhood sweetheart and her scientist father before heading for the moon. Wacky or what? Be prepared for something special with this real hot comic conversion — stunning arcade action and a varied plot.



■ ROCKET RANGER

DRAGON-SLAYER

Legend ■ Amiga & ST ■ £29.95

A slaty bit of the art arcade adventure featuring over 300 locations in castles, forests and villages. It's pretty obvious from the title what your role is in the scenario — left just say there's 50 different enemies some of whom occupy half the screen as a single spell. And the animation you can say something really special — the Amiga version will display 80 colours throughout, another demand is that that 3D horizons are being stretched.

FALCON

Spectrum, Halodays, Mirrosoft
Amiga & ST ■ £79.95

Interceptor-style 3D graphics combine with multiple views in a simulator where you'll have 12 mis-

sions to complete against various MiGs. There'll also be a facility to challenge another pilot in machine to machine combat as you hit Mach 2 with a plenitude of missiles, bombs and cannons.



■ FALCON

PACMANIA

Granddads ■ Amiga & ST ■ £29.95

Granddads' great run-up conversion comes your way in 64 colours with Pac Man himself in 16 shades as he works his way through the 22 levels. Worth a look for nostalgia at least as this pioneering figure of computer entertainment guarantees his rightful place in the 20th century's archives.



■ PACMANIA



PIXEL PUNCHERS

Many computer artists use programming, nondestructive techniques for creating pictures. Artists like Mike Pineda use mathematical procedures that don't yield a final image for hours or even days. The results are often surprising and spectacular. Other artists prefer the immediacy offered by painting software; the ability to change, erase, start and repeat images instantly.

The graphics capabilities of computers are advancing apace; and the uses for so-called superworkstations are many: video titling, animation, scientific research, CAD, DTP. Richard Monteiro looks at the machines creating pixel masterpieces and graphics grandeur.

You'd be hard put to watch a day's TV without seeing some form of computer-generated art. Scores of television adverts and programs use computer animation; travel agents, insurance brokers and estate agents use pixel pictures to display product information; some train stations and airports take advantage of computer graphics to inform travellers of arrival and departure times, gate numbers and other useful information.

The story doesn't stop there. Far from it. Computer imagery reveals the invisible. Computer graphics enhance images grabbed by medical scanners or factors can really see what's going on. Much more data is available to the geologist on a computer screen than a seismograph. A computer-generated car can be driven into a computer-generated wall and the results observed by engineers without the cost of any auto hardware.

Early computers didn't have any graphics capabilities; output was generally through teletype printers or, at

most, teletextor-like devices. Such limitations didn't prevent programmers from experimenting, however. In 1960 an operator on the CDCAC (Electronic Delay Storage Automatic Computer) at Cambridge University produced an image of a Highland dancer on one of the computer's oscilloscopes. A few years later Christopher Strachey at Manchester University programmed a computer to play draughts on screen. Humble beginnings, indeed for computer-generated art.

Machines making movies

Perhaps the most talked about, if not misused, graphics system is Quantel's Paintbox. Several versions of the megasystem exist. The best known is Video Paintbox which is used by many television and video companies for generating routine effects and superb introductory sequences. Cost for the system is between £80,000 and £100,000. Over 500 systems exist worldwide, with

the UK having a 10% share. The BBC alone has 25 systems.

Graphics Paintbox is another of Quantel's babies, this one is used by the printing industry. It boasts an atmospheric colour palette colours can be mixed to produce new colours, resolution enough to create pictures of photograph quality and a £205,000 price tag. Surprisingly there aren't too many Graphics Paintboxes in the country - three or four according to Quantel.

It's all customisation made Paintboxers. Quantel aren't keen to divulge any information on what makes the systems tick, but you can tell it's circuitry is pretty hot.

Technology like that afforded by Paintbox is constantly dropping in price. Silicon Graphics, for instance, manufacture a workstation by the whopping name of 4D/8001. The machine boasts a 16.7 Mhz RISC processor functioning at 13 MPFS, 380Mbyte hard drive, 19" 1280 by 1024 colour monitor and 8 Mbyte of memory. It runs Unix Version 3 with Windows and Sun's Xerox windowing

COMPUTER GRAPHICS EXHIBITION

The 1988 Computer Graphics Show is the first held at Wembley Exhibition Centre, London, between October 11th and 13th. Show hours are from 10am to 5pm except Thursday the 13th when opening hours are from 10am to 4.30pm. All that is entered through a graph, or a personal computer, is a personal computer. It costs £100.00 and are available from Wembley Centre 020-858 6666. Under 16's not admitted.

GRAPHICS



MAD BASTARD

Being CBI magazine follows us to the 'Bast' has a 50cm x 50cm resolution featuring a realistic animation creating through a ghost town. That Bastard is the name of the full-page photograph an entire Digital Effects. The budget for the other scenarios was a mere £50,000. But when you consider the entire cost of the entire project, it's a million pounds.

environment. The 40/80GT shows users to design and manipulate complex, fully rendered and fully lit by-ray traced images without the need for creating primitive wireframe designs. This is achieved by a proper story graphics sub-system coupled to the processor – basically, it's one hell of a machine, and all for the mere fee of £65,000.

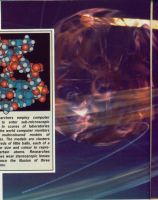
Still too pricey? For £20,000 you can get hold of the Video Paint MP101 system. Painting software, graphics tablet, and several feet of paper, don't appear staggered due to subtle colour shading, vibrant graphics and 40 Mbytes hard drive included.

The next best thing to a graphics superworkstation – if you don't have several hundred thousand pounds spare – is an expansion card for your PC. Something like the Falcon Color Card which features 256 colours on screen from a palette of 16.7 million, 2Mbyte of memory, hardware pan and zoom, on-board firmware and HD64180 processor. Currently, the board only interfaces to IBM PCs, but if around £2000 this probably isn't a worry for rigid home users.

CI based in West Germany have two graphics expansion boards for the Amiga. Megapixel 02 is available now and offers a one megabyte frame buffer, non-rendered 800 by 600 resolution (1024 by 780 interlaced) and 256 colours on screen



■ Researchers employ computer images to enter sub-micron scale. In scenes of laboratories around the world computer monitors display multi-dimensional models of molecules. The models are clusters of hundreds of 8000 balls, each of a particular size and colour to represent certain atoms. Researchers sometimes wear stereoscopic lenses to enhance the illusion of three dimensions.



from a palette of 256,000. No design software exists for the system, but boards are provided if you are interested in developing your own software. Cost: around \$800 (Deutschmarks £1100).

Creative Age 2000 – ready real soon – is an A2000-only board with graphics acceleration running at 20Mhz, images of video RAM and the same colour capabilities as the Amiga. So what makes the thing so special? 1024 by 768 interlaced mode and the possibility of spending as much as £1000 on the board. Price for this model is expected to be between \$1000 and \$1000. For more and you can still receive the same board with extra memory and better resolution. CII can be contacted at: Macintosh No. 15, 4799, Schenck, West Germany 052 49 285 34000.

And, of course, there's the oft-mentioned Parallel board. An 20 version is due out first with an Amiga model following fast before on the board situation.

Graphic techniques

There are two fundamentals for creating computer graphics: modelling and rendering. Modelling (wire-frame drawing) requires the artist or designer to enter structural information which lines, join to particular points, where a sphere attaches to a cube,

what radius is given to a circle. Rendering (filling) forces the computer to display the model complete with colour, texture and shading.

Many wire-frame drawing packages use the school-learned technique of creating cubes: two squares are overlapped, the corners joined with parallel lines and the edges normally hidden by the front surface removed. A better method can be found in solid-modelling systems which are essentially wire-frame drawing programs with surface recognition and automatic hidden-surface removal. The another method of producing models, constructive solid geometry (CSG), works by having a set of basic objects. The user can build new shapes by adding several primitives together. The final step is to add colour and emphasis to the object's three-dimensionality.

Imitating the random quality of nature is probably the most difficult task for computers to undertake. Flames, irregular branches of trees, flowers in mountains and swirling fields of corn are among the many items that solid-modelling programs haven't a hope of handling. Drawing each link of an oak tree or every creek in a well-rendered scene for too much processor time – not to mention artist's time. Programs are available for drawing trees and flames; these have pre-programmed shapes and simply open them onto the screen according to the designer's directions. Rotation is simulated by the program's built-in randomness.

PIXEL BOOM FOR THE ST

Siemens Research's Parallel board (first announced four months ago) has had its specifications changed and is now the 'Pixel Boom'.

A 20/60, 40/80, 80/160, 160/320, 320/640, 640/1280, 1280/2560, 2560/5120, 5120/10240, 10240/20480, 20480/40960, 40960/81920, 81920/163840, 163840/327680, 327680/655360, 655360/1310720, 1310720/2621440, 2621440/5242880, 5242880/10485760, 10485760/20971520, 20971520/41943040, 41943040/83886080, 83886080/167772160, 167772160/335544320, 335544320/671088640, 671088640/1342177280, 1342177280/2684354560, 2684354560/5368709120, 5368709120/10737418240, 10737418240/21474836480, 21474836480/42949672960, 42949672960/85899345920, 85899345920/171798691840, 171798691840/343597383680, 343597383680/687194767360, 687194767360/1374389534720, 1374389534720/2748779069440, 2748779069440/5497558138880, 5497558138880/10995116277760, 10995116277760/21990232555520, 21990232555520/43980465111040, 43980465111040/87960930222080, 87960930222080/175921860444160, 175921860444160/351843720888320, 351843720888320/703687441776640, 703687441776640/1407374883553280, 1407374883553280/2814749767106560, 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■ **Yuppie 'Fractal on a Bridge'** TV commercial, designed by Barry Derrington at the BBC and animated by Digital Pictures, demonstrates the ease with which computer animation and live action can be mixed to produce a convincing vignette.

has 38,000 frames entirely generated by computer. A Cray XMP (which costs around \$10-million) - with painting software featuring a 70-bit colour palette, multi-light-source ray tracing, and rendering functions capable of introducing transparency into objects - was used to achieve the realism. It still took 40-5 minutes per frame, though.

CAD is a fast-growing area that makes intensive use of silicon-created graphics. One particular group of architects in Chicago can stroll down Michigan Avenue without leaving their seats.

These computers generate a complete 3D model of Chicago by drawing from a massive database that includes the cubic dimensions of every structure. CAD isn't just restricted to wire-frame creations; computers can generate a model finished in wood, brick, stone or marble - the correct colour and texture of the material will be displayed by the computer.

Other areas where computer graphics play an important role include: CAD (Computer-Aided Designing), CMC (Computer-Aided Manufacturing), DTP, simulation, satellite data enhancing (weather maps, theme maps and deep-space visuals), analysing digitised images of athletes, brain scanning equipment and sub-microscopic research. ■

LOADS-A-COLOURS

A computer's palette is determined by the size of the machine's colour register. Register size is measured in bits. Bits, think a computer with an 8-bit colour register will have a palette of 256 colours (2⁸ is the largest value that can be held in eight binary digits). The 57 points in 512 colours and the Amiga's 4,096 colours. Many workstations now offer a palette of 16.7 million colours (that's the largest number that will fit into 24 bits).

Usually only a fraction of the total number of colours offered by the palette can be displayed on screen. Memory and resolution are the governing factors. The total number of colours that can be represented on a screen depends on the number of bit planes (but a limit may also exist depending on the particular pixel). For instance, if a computer has four bit planes, it can display 16 colours on screen at once. If, for instance, you have a 640 by 400 screen with 256 colours then you will need 1,000K of address memory to support it (that's 100K is - remember there are four bytes in 32 bits).



▲ **BBC 'Top of the Pops'** New Year title. Design: Barry Derrington. Computer Animation: Digital Pictures. ■ **Cartoon quality graphics are possible with Silicon Graphics' 40 series RISC-based machines.**

Creditable computer-created landscapes are possible thanks to the mathematician Benoit Mandelbrot. Fractal geometry - as his work is now called - is a technique for mathematically building landscapes, and other naturalistic forms. Of course, semi-regular shapes that don't resemble anything on Earth are just as easily produced. Captain Blood, the exploration game for SII and Amiga moves, uses fractal mathematics to generate realistic planet landscapes.

Ray tracing, a rendering procedure which evolved from software designed to determine how nuclear radiation passed through solid objects, arguably does more for a picture's realism than any other process. Ray tracing programs imitate the intricate play of light on a scene by calculating how countless individual rays are reflected from shiny surfaces, absorbed by dull ones, blocked by opaque objects and refracted by transparent and translucent ones. Generating a ray-traced picture can take hours, even days, on even the most powerful workstation, but the results can be so realistic, they are often mistaken for photographs.

Pixels at work

No matter what your rendering task, you're guaranteed to find some form of computer-aided art. From the South Dancer of Iliad (Bastard) in the opening sequence of *Blade* to the sunbath swirling robes of *Bliss* (Mist) at Ten, from the mixed computer graphics and live action of the *Poltergeist* afterburner to the totally computer-generated *Starliner*, afterburner, from the simple skills in *Catch Phire* to the extraordinary animations found in the latest *Access* adverts.

Even the Amiga is used for creating titles and other interesting effects for television programmes - like *Network 7* and the *Chart Show*.

Bigscreen firms also use computers for graphics. Then, for instance, use the first film to include over 75 minutes of computer animation and a further 25 minutes of combined computer graphics and live action. Due to the huge amount of time needed to make the graphics sequences, the film went over budget, it's poor plot and weak characters ensured it wasn't a box-office smash. The *Lord of the Rings*, which came later and consequently avoided many of the pitfalls of *Ten*,

AMIGA ENHANCED CHIP SET

Enhancers are in the throes of producing an Enhanced Chip Set (ECS) for existing 68000 and 68008 Amigas. The new chips will replace old families like Agnus (or relations) and Denise. All current video modes will be supported - meaning the resolutions and colours offered by existing Amiga will still be available. The new version of Denise will offer a high resolution 640 by 512 non-interlaced mode (capable of four or eight colours). The exact number of colours isn't known yet, but will probably be four. The new Agnus, meanwhile, will be able to access one megabyte of chip memory rather than 512K.

Agnus takes care of addressing and memory while Denise handles other resolution modes. At 68000 centres are going to be sold in the form, though, as the first Agnus chip was long and thin, while the latter is Agnus (and the Agnus found in 68008 and 68008 models) is square in shape. It's a fair bet that some third party manufacturer will produce a converter, though, which will allow the 68000 to enjoy the new chips.

A multi-year member, which Commodore are also developing, will be needed to study the new mode. Although saying this has been confirmed by Commodore, it is likely that the ECS and multi-synch member will become part of their planned VDP work. Commodore are keen to keep the price of the ECS upgrade as low as possible. While no price has officially been set, industry commentators expect it to be well under £100.





GRAPHICS

SPRITE FACTORY

Creating convincing animated graphics is one of the hardest tasks games programmers face. Richard Monteiro looks at a package designed to take the drudgery out of sprite creation, animation and implementation.

£49.95 ■ Colour STs only ■ Future Software Systems/CRL, 7 Kings Road, Coppenhall Road, London, E15 2AB (01-485 2391)

Joining the ranks of Pro Sprite Designer and the sprite creator bundled with STOS, Sprite Factory comes in a zip folder; the manual is stapled inside. Somebody somewhere screwed up. The package also includes two disks, containing the sprite generator, Chamelion file conversion utility, demo programs and a folder full of compressed files. These depend to fit three, single-sided disks.

The minimum configuration necessary to run Sprite Factory is a 520 with colour monitor for television.



■ Rotating, shrinking, flapping, sliding and other shape-distorting features are readily performed on the large grid area.

Only the 16-colour low resolution mode is supported.

There are plenty of design options, which are all accessible from a menu box on the main design screen. Fill into you load or save sprite data, palette information and animation sequences. Opting to load a file produces a prompt asking you to place the data in the data buffers FILE1 or FILE2. FILE1 is the active buffer in which all operations are carried out. FILE2 is used for copying or inserting frames into the active buffer.

CLAR does the obvious. Fill produces another menu: 4-Way fills an area until it hits another colour without creating a diagonal boundary. 8-Way fills in all directions. Fill All changes every pixel of a specified colour. Several options exist for drawing lines, boxes and circles. There are MORGE, ROTATE and SHAKE functions, but only to expand feature sets.

Single sprites are stored in frames. The maximum size of a frame is 32 by 32 pixels — a limitation considering that the trend in games is to have huge, detailed sprites. Having a standard frame size means that an-

■ The largest sprite you can create is 32 pixels by 32. Drawing sprites is simply a matter of selecting a colour from the multi-coloured bar just above the large grid, and clicking the mouse pointer somewhere in the grid. A small grid displays the sprite at actual size.



imation is very easy. The animation section allows you to select up to 1000 frames in any sequence and then replace them. The software handles pulling of frames and altering of display rate.

Sprite Factory contains everything necessary for putting working sprites into your programs. Animation and collision detection are well provided for with tutorials and example programs on the disks. Sprite Factory works lightly in most departments, but only works in low resolution, only allows sprites store up to 32 by 32 pixels and isn't cheap.

COLLISION DETECTION

The simplest way to detect the collision of two objects is to define a rectangle surrounding each object. Although this method is fast, it ignores the detail or curves in an object. An advanced feature boundary-detection method is to use a program with an increasing number of sides. Ultimately this technique allows a pixel the outline of an object.

OTHER GOODIES

A patcher the conversion utility called Chamelion comes bundled with Sprite Factory, which lets you put graphics from Dragon, NeoToscan, ST or Sprite Factory pictures and incorporate them into your own programs.

Your archived files also come with the system. These must be un-archived with a program supplied before they can be used. You'll need a couple of extra disks to store all the unpacked files. The extra files are MAP-MAKER, JOYSTICK, SCROLL and SPACEMAN.

Map-maker can be used for creating large screens and maps using system as provided. With MAP-MAKER you can create a map consisting of 100 objects per level. This level are pre-rendered — that's 500 screens of custom play area packed into 100!

The Joystick program allows you to check your joystick under joystick control. You can define the sequence for eight directions. When using the program look for smoothness of motion, speed of movement in all directions, return and clarity.

Scroll simply demonstrates smooth scrolling under joystick control, big disk, and SPACEMAN is a demo that runs under GFA BASIC 3.02.

for

- Tutorials on animation and collision detection
- Good sprite editing features
- Game map generator included
- Animations can have 1000 frames

against

- Limited sprite size
- Low resolution only
- Slender and manual don't fit together

features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

pros/cons

1 2 3 4 5

format
value

1 2 3 4 5



FLIPPER

You've got plenty of time to create award-winning animations for next year's Amiga Animation Competition, but Hash Enterprises would still like to speed up the process for you. Richard Monteiro looks at their budget animation utility.

£42 ■ Amiga only, 1MB, two drives recommended ■ Hash Enterprises/Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, Scotland, EH1 3BN (031 9573242)

The Amiga Animation Competition sponsored by the Amiga Centre Scotland has been and gone. The event sparked off great interest in moving graphics and a repeat event is promised for next year. Commissioners might be involved next time round and have been heard to murmur "TV coverage". Whatever happens, there's still the attraction of an AG2000 first prize.

So what do you need to create animations good enough to win big prizes? If you're not into sleepless nights, and incoherent coffee, Flipper could be a good bet. Flipper is another in Hash Enterprises' Animation series, and follows its own Stand, Maptools, Effects and Appearance. Essentially, Flipper lets you create vignettes (short animation sequences). All you need is a selection of pictures created by an art package or painted by a digitiser. Flipper does the rest. All pictures in a sequence must be of the same resolution - this can't mix high with low resolution, low colour with 32 colour

images, or watermarked with non-overlaid.

Starting a script

The first stage in creating an animation - assuming you have a database of pictures - is to create a script by selecting image files in the order you wish them to appear in the animation. The same picture can appear several times.

Once you've decided which pictures are to appear in the animation, you can determine how many times a frame is to repeat. Frames are displayed on screen for a 1/20th of a second and, not surprisingly, can be forced to repeat in 1/20th of a second increments.

The next operation involves packing the files detailed in the script. Two packing options exist: RAW and HUSH. RAW is the standard used by other packages; it squashes frames more tightly and plays them back faster than the HUSH technique. The

only reason you might want to use HUSH packing is to maintain compatibility with other Hash products. Make sure you have a blank disk with plenty of free space for the compressed animation. Errors occasionally occur during packing, but no message appears informing you of the problem. This can be extremely frustrating as it can be a good few minutes before you realise something is wrong.

Animated action

A separate program on the disk plays back the compressed contents. And that's all it does, although certain key presses allow you the chance to decrease the playback rate.

It's a shame there isn't an option for creating stand-alone animations. Having an entire program to read and display the packed pictures is a hindrance. Admittedly Flipper is half the price of most animation software, but even so it has few features.

ANIMATION SPEEDS

Some Flipper animations also look better than others. The slow-motion quality of the changes between dark frames (the compression results only cause the effects of 1-bit colour pictures). Comparatively pictures that offer greater contrast have to travel less far to move meaning that means a greater time in 1/20 seconds. Comparatively pictures that are packed in your computer Flipper as a picture flow rate (in many of the cases, the 1/20th of a second is not a constant).

features

1 2 3 4

performance

1 2 3 4

ease of use

1 2 3 4

manuals

1 2 3 4

format value

1 2 3 4

for

- Reasonably cheap for an animation package
- Intuitive to use

against

- Errors in compacting not always displayed
- Can't create stand-alone animations
- Few features when compared with similarly-priced competitors



■ A sequence of picture files can be compressed and then displayed quickly giving the impression of animation. Complex pictures (those with lots of colours and lots of movement) don't compress well and take more of the animation process.



HARDWARE

BOOST YOUR ST

Two methods for speeding up your ST. One involves a solder sucker, blitter chip and chainsaw. The other boots from disk. Richard Monteiro, with stop watch in hand, puts both to the test.

CAUTION

If you manage to get hold of a blitter chip, you'll fit it at your own risk. As soon as you open up your ST your guarantee is invalidated. Hence, responsibility for any damage to your ST, but we won't be responsible for your misadventure.

For every bit of static electricity—it can cause many of your ST's chips to blow, consequently costing you hundreds. Carry out the work near water pipes or some other object that you're sure is grounded. Before you start fiddling away at your machine, touch the static. This will remove any static electricity that happened to be attached to you. Take care when handling the blitter; try not to touch any of the pins.

ST BLITTER CHIP

Anybody who has bought a Mega ST knows that they are supposed to have a blitter chip inside to boost their graphics; however, because of initial shortages, Apple did not install them. Now that supplies are (not about) flowing, you can fit your own blitter and turbocharge your ST.

Your local dealer could probably fit the silicon slice... for a fee. If you've got a Mega ST2 or Mega ST4 then it's probably worth doing the operation yourself. After all, it only involves placing the blitter in a socket and removing two blobs of solder.

Carefully follow the options to pictures 1 to 4, which show you the installation process. You will see a pair of pliers, a soldering iron, a solderwiper and a solder-sucker. If you haven't got one of these, try your local electrical repair shop—they may lend you one. Alternatively, take your ST down to the repair shop with this article—it's a two-minute affair so it won't cost much, if anything.

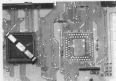
Once everything's back together and working, a few days' fiddling, in the Options menu tells you that the blitter is functioning correctly. You can click on this item to switch the blitter on or off, a tick to the side of the option tells you that the chip is operative. Some programs won't work with the blitter—that's why the switch function is present.

QDOS automatically makes use of

FITTING BLITTERS IN 520S AND 1040S

Early 520s and 1040s can't easily accept a blitter chip—there's no blitter socket and the firmware wouldn't recognise the chip anyway. The problem is less severe with later ST models. You can tell if your ST contains one of the newer variants in the years 1988-89 will appear in the following table (see *Accessories from the Best Issues*).

Unfortunately, even new 520s and 1040s don't have a blitter socket—there's room on the motherboard for a socket though. The socket costs £4 and is available from most component suppliers. Don't, however, expect any information on fitting the socket; it's easy enough if you've experienced with a soldering iron and have access of steel; otherwise it's definitely a job for your local component repairman.



Take this to your dealer. There are 88 holes to identify before you can fit the blitter socket. And a further two (89 and 90) after that but you've got the protective shielding to contend with.



1 - Disconnect your Mega from the mains and unplug the keyboard and any other items attached. Remove all the screws securing the two halves of the case, and gently remove the top half. A wire secured the motherboard standing and top half of the case will prevent you from separating the two pieces immediately. Towards the left at the back of the case you will find the wire connections. Remove the connector strip. With a pair of pliers, snap-off all the clips that hold the shielding to the motherboard. Remove the shielding to expose the circuit board—hang onto your guarantee.



2 - You'll find the empty blitter socket to the right of the cartridge port and above the 68000 processor. Look for two relatively large solder blobs. One can be found above a resistor (R21) while the other is left of the internal hard disk socket. Hope you've brought a solder sucker with you.



BLITTER VERSUS TURBO ST

The Blitter chip and the Turbo ST program do different jobs. The blitter is designed to move blocks of data, preferably large blocks, at high speed. It does this very well. Turbo ST also moves blocks - but only character-sized blocks. The blitter is more versatile as it speeds up block movement of any size, vertical and horizontal line drawing, and other GEM block graphics functions. Turbo ST speeds up screen printing and erasing files.

With a blitter installed you will notice that windows -drawing is faster than clearly. Turbo ST speeds up window updating (the speed at which text or icons fill the window).

We carried out some simple timing tests with the standard system, blitter-equipped system and Turbo ST-enhanced system. The tests measure the system under the least possible conditions; hence these are the greatest speed increases you're likely to get, to provide the gauge will be less. Character printing to the screen with blitter installed results in a speed increase of 30% on the standard system. Turbo ST speeds up character printing by 14%.

Line drawing is faster by 32% when the blitter is onboard. Turbo ST does nothing to improve performance; line drawing is increased by 62% with the blitter for very large lines, that is, above Turbo ST does nothing.

Software performance is marginally improved when blitter and Turbo ST. ST BASIC is perhaps most noticeably improved when Turbo ST is installed - it almost makes ST BASIC usable. Other packages that manipulate text benefit from Turbo ST: Word Writer, ST BASIC, Final Word, Data Manager. Almost all software that uses GEM will benefit marginally from the blitter, there is need to nothing that really shows off the true power of the chip - Cyber Studio is one exception.

the blitter, so window operations will be much faster. All software that uses GEM's block graphics calls will reap

the blitter's benefits. Games software will not usually, unless the routines access the blitter directly.



■ 1. Remove the turbo mode with a solder sucker. Try not to suck half the circuit board at the same time. Remove the solder for long across the blitter socket. Use a blunt instrument.



■ 2. Notch the chip. The blitter socket has a tiny hole bored into one of its sides. The blitter has a similar-shaped indentation along one of its sides. This indicates where you slip the chip into the socket. Put the (flat) back where you've fitted the blitter. And now put the rest of the ST back together. Pray that the blitter functions correctly.

TURBO ST

£39.95 ST only ■ £39.95

■ Softtek, HiSoft, The Old School, Greenfield, Bedford, MK45 5DE (0425 718181)

The blitter chip is very good at moving large amounts of data around the screen quickly, but when it comes to shifting character-size blocks, it's hopeless. The reason is that the blitter takes a long time to set up; numerous parameters must be sent to the chip telling it what it has to move and what operation it must perform on the data it moves. The procedure is slow and must be carried out for every single operation.

As the ST has no text mode (characters are displayed on screen in graphics mode), any operation that involves placing characters on screen will use the blitter if it's there. Usually characters are held in an 8x8 matrix - not very large which means the blitter's power is poorly used.

Turbo ST has been designed to speed up most ST programs that write text to your screen - word processors, spreadsheets, GSP packages, certain features of the Desktop and so on.

The software that does the speeding up is an Assembly, so all you need do is place the program in the root directory of your hard disk. Resetting the computer causes the assembly to load automatically. From the Disk menu you can click on the Turbo ST option which causes a dialog box to appear. Options let you install or remove Turbo ST. That's all there is to it.

Does it work? Yes. But it's unlikely you'll notice the difference - not unless you switch Turbo on and off regularly and watch closely, that is. Most programs that manipulate text will benefit from being turbocharged (see the box for more detail). Commercial games won't, neither will graphics-intensive packages.

TURBO ST

for

- Very simple set up procedure.
- Faster than the blitter for certain operations.
- Works with the majority of GEM-based programs.

against

- Doesn't increase printing of GEM's fonts.
- Only speeds up text and rectangular fill routines.

BUYING THE BLITTER

Not all blitters are the same, there's a certain shortage of the chips. And here's a shock, but there are being sent to dealers and customers who have requested the operation of all can handle. It's unlikely that the situation will improve until early next year. Your local dealer might be able to supply you with a character-order the sooner... but at what cost? Around £20.

Don't forget, blitters are closely related to the price and your dealer should be able to get you to use for you. (Warning: blitter chips are not available, offer a few regular services for all blitters bought from them.)



Features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

reliability

1 2 3 4 5

format

1 2 3 4 5

value

1 2 3 4 5



ST PD

Public domain libraries just grow and grow. And the quality gets better and better - Richard Monteiro peruses the best of the latest ST PD utilities.

There's more to PD software than games, demos and digitised radios. Forget them all and take a look at some of the exciting quality software that is beginning to emerge.

Lots of good software exists, really outstanding programs are hard- or to come by. Quality, originality and competence usually marks a PD Platform available - files guide these awards, ready shouldn't be missing from your collection.



FSEL

When you load or save a file from within a commercial program, it is likely you will be presented with a file selector box. This allows you to have in a file name, log in another disk or open a folder. The magnificently named FSEL customises the standard QEM selector making it much simpler and more powerful.

FSEL sits in an auto folder and automatically loads at start up. It uses up around 20K of memory which is negligible when used with the majority of software. You won't be aware of the patch until you load or save a file from within a commercial package: ST BASIC, THE WORKS, SYMATIC ST, DESKAL ILITE, and so on.

Unfortunately no documentation comes with FSEL, but it doesn't take

long to work out what it does.

Along with the standard file selector options, FSEL displays extra file information, like the creation date and size. Files may also be sorted alphabetically, by extension, by date or by size. The decisions can also be printed at any time and any drive can be selected as long as it is present.

An icon with a question mark also sits in the customised file selector; clicking on it appears to have no effect. Can anyone help?

FORMAT 11

Available in assembly form, this disk formatting program will stretch your ST's drive capabilities to the limit. Doubtless, you're sick of formatting utilities, but this one beats the lot. Even Apple owners will cringe when they know how much data can be saved on a double-sided disk - 905K.

lets you create any type of sector layout with custom ID fields, any gain lengths, control (CRCs), and many other add-ons; the analyzer checks with abnormal formats and displays track information, data between sectors and ID fields.

The coder is pretty fast too; suffice to say that it comes with a full range of backup utilities that extend to cover copy protected disks.



SUPER BOOT 2.0

An all-time best program that does just about everything you could ever want. It allows you to display any picture in TBM format, choose which accessories to load, choose from any number of DISKTOPPERS file thus allowing you to change resolution,

SUPPLIERS

For the latest ST PD go to any of the following: Software (0242) 588049, Pippinshop (0204) 604164, Page 6 (0204) 212008, Star UK (0204) 880048, 4816 the PD newsletter

two months supplied by Pippinshop ST - Banks, shops. The disk is free with computer systems to take out too, in case you are interested in getting an LTL, OS and LTL 36.

If you run a software store and would like to be mentioned in this list, or if you have discovered other worthy of a mention on these pages, please write to: ST PD to PD/ST/UK, ST/UK/UK, Format 11 Queen Street, Bath, BA1 1EL.

OTHER NOTE WORTHY TITLES

Look out for these items of PD software also worth a place in your collection:

PC COMMANDER - a command-line interpreter with batch file support. It provides an interactive interface to DOS. Commands are similar to PC-DOS. Personal leader access to FSEL facilities than the other developer. Advanced commands can be entered on a single line for better efficiency.

FORMAT 200 - stretch up FAT recording (up to least two times), works all discettes over read and then the Multibyte bug.

PHANTOM FILE - an accessory that displays everything there is to know about your ST's drives attached memory, COPS LOCK status, etc.



The customised file selector offered by FSEL, it offers immediate drive action, lists contents of directories, file writing and some drive information. But what does the question mark icon do?

in total, formatting.

The formatter works by reformatting 11 sectors onto each track, and formatting 88 tracks. Yes, your drive needs to be in laptop condition. That said, we found disks formatted in this manner to be reliable. If next month's issue of Format is late, you'll know they didn't fail.

DISKMECH

A superb disk analyzer, archiver and editor. Just look what it can do: the sector editor can read and edit any sector regardless of size, track number, or side number; the format editor

will edit layout and so on, decide which properties in the AUTO folder to use, have Write Verify on or off, set the date and time, and a whole load more.

Super Boot works on any Atari ST, from any hard drive, and on either colour or monochrome.

A configuration program allows you to tailor Super Boot to your preferences. This alters the main program which resides in an AUTO folder. Options are turned on or off by pointing and clicking - very friendly for less software. Even the documentation is good - too good to be true!

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MIDI ON THE AMIGA

Judging from the replies to issue 1's questionnaire, a good number of you want to dabble in hardware projects. Never say we don't deliver. Robert Penfold explains how to build a price-busting MIDI interface for your Amiga and gives a few useful applications.

The range of MIDI software for the Amiga is not yet what could really be called vast, but there is a steady flow of new MIDI files, and the Amiga has good potential in this area. Unlike the Atari ST,

the Amiga has no built-in MIDI ports. The standard form of commercially available add-on MIDI interface for the Amiga is a simple adapter for the serial port.

A MIDI interface for the Amiga

does not need to be particularly complex, and it makes an ideal project for Amiga do-it-yourself addicts. The unit featured here plugs into the serial port of the 4500, 4700, or 4900 and provides MIDI IN, THRU, and three OUT ports.

Serial crops

Essentially, a MIDI interface is no more than a high-speed RS232C serial interface. However, there are differences between MIDI and standard RS232C interfaces, and these must be taken care of by software and the computer's hardware.

The standard MIDI word format is one start bit, eight data bits, one stop bit, and no parity. This is probably the most common RS232C word format, and it is one that any RS232C interface should be able to handle without any difficulty. The original MIDI specification had the baud rate at 19200 baud, which is the highest standard rate for RS232C interfaces. This rate dropped two-fold, and was raised to 31250 baud when MIDI was finally launched. This high and non-standard baud rate is the main obstacle when trying to use an ordinary serial port for MIDI purposes.

Construction details

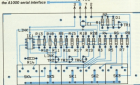
Construction of the unit is made as easy as possible by having everything (including the two sockets) mounted on the printed-circuit board. Details of the printed circuit and component positions are provided in Fig. 1.

There are a few minor points to note when building the board, one of which is to make sure that IC1 is fit round the right way. The U-shaped indentation on the body is not always present, but if not there should be a dot at the end of the component and



■ The completed unit in all its glory

To pin 9 of the 4500, 4700, or pin 20 of the 4900 serial interface



■ Figure 1 - The component layout. In blue are the conductor copper tracks on the board. What you have to do is insert each component into its correct holes from the unpopulated side of the board, so that the wires stick out of the copper-plated side. Then solder the leads to the tracks. Refer to the parts list to make sure you put the right ones in the right places.

This isn't printed at full size, so you can't stick your own board. A full of parts is available - see later in the article.



LISTING 2 - MIDI CONTROLLER EDITOR

```
REM MIDI Controller Editor Program
OPEN "read:300,a,b,1" AS #1
DOKEY 144776184,113
INPUT "Enter channel number ",chan
INPUT "Enter controller number ",contid
Read=chan*128
GOTO 100
WHILE NOT
  GOTO 100
PRINT "PROMPT:1,100,100"
PRINT "1,CHN:1,100,100"
PRINT "1,CON:1,100,100"
PRINT "1,CON:1,100,100"
PRINT "1,CON:1,100,100"
IF NOT #1 THEN GOTO 100
CONTID=1
PRINT "1"
INPUT "Enter controller number ",contid
PRINT
```

gives the correct value for the first byte in each message. The second byte in the message is simply the new program number, which is from 0 to 127. This is assumed to start at a value of 0, and the program increments it by one each time the pedal is operated.

The OPEN statement opens a channel to the serial port and sets it up with the right parameters. At least, it sets it up correctly apart from the baud rate, which is set to the right figure by the FORK in the next line.

The main body of the program is a flow line WHILE...REPEAT loop. This checks the limitation of joystick port 1, and branches the program MIDI-OUT subroutine when this button is operated. A joystick connected to

port 2 is fine for testing programs, but to use the system in earnest a foot pedal must be connected to port 2 via a 9 pin D socket. Connection details for the socket are shown in fig. 5.

Some instruments do not use the MIDI program change numbers when selecting programs by way of the front panel controls. On a Casio C21 for example, programs are selected by ten rows of pushbuttons labelled A to H and 1 to 8. The instrument's manual should make it clear how these program identifiers relate to the true MIDI program numbers. If the main menu adaptation program number is reached, the program cycles back to zero again, and continues in this manner indefinitely.

The program could easily be

extended and customised to meet individual requirements. Extra pairs of FORK instructions plus an extended INPUT instruction could be used to permit the program change messages to be sent on more than one channel. Rather than having to adjust the instruments to set programs 0, 1, 2, 3, etc. to the required sounds, it should not be too difficult to produce a version of the program that enables the user to specify a sequence of program numbers.

In control

Most MIDI instruments permit at least some of their sound generator parameters to be controlled via MIDI controller messages. The program in the second listing employs a controller to be selected from the keyboard and then adjusted by moving the mouse backwards and forwards. The screen displays the current controller value. This is generally faster and easier than controlling instruments via their rows of push button switches.

In the initial part of the program the MIDI port is set up and the output channel to it is opened. Then the MIDI channel number and initial controller number are entered by the user. The MIDI control change message has 1111 in binary as the most significant four bits of the header byte (1.16 in decimal). Adding 125 to the channel number therefore gives the value of the entire header byte, which is stored in the variable HEADER. The main body of the program repeatedly outputs these byte MIDI controller messages. These consist of the header byte followed by the controller number, and then the value to be assigned to the controller. This value is obtained by reading the mouse using the MOUSEX function (which must be preceded by a dummy MOUSEY instruction). The value returned from the mouse is in the range 0 to 244, but it is converted to an integer in the desired range of 0-127 by some simple division, and rounded by assigning it to the integer variable %N.

The final part of loop is used to

MIDI PROGRAMS ON DISK

To get you going with MIDI we've included all the things from *Music Page 1* (pages 10-15) and *Music Page 2* (pages 16-21) on the month's master disk.

On *MUSIC FILE 1* - shows you how store sound data in data from any of the popular samplers in only a couple of lines of BASIC. MIDI in *LIST 1* shows you how to send a MIDI sequence from disk and play it back, and also gives you a program for the Capi-2000 synthesiser. *LIST 2* shows you how to store sound data in the disk. The *Music Page 1* and *Music Page 2* programs are also shown on the disk. For more details on the disk, see the advertisement on page 21 for more details.

For the Disk Data section on page 21 for more details.



Thanks to the fact Cambridge that this is the first of the Capi-2000 synthesiser to use the photographs.

If you are looking for a copy of the Capi-2000 synthesiser, see the advertisement on page 21. They will cost around £295.



BAUD AND SIGNAL LEVELS

From the hardware point of view the main difference between MIDI and an ordinary RS232C interface is that MIDI uses a current loop system, whereas RS232C interfaces use different voltages to represent the two logic levels. The RS232C voltage are not more than 5 and 5 volt logic levels, but current potentials of plus and minus 12 volts. MIDI has a nominal output current of 5 milliamperes which is switched on or off to represent the two logic levels. This is rather like switching a light bulb on and off, but it is actually a light emitting diode that is being controlled. This forms part of a device called an optoisolator which is mounted close to every MIDI output. The light output of the LED is directed at a photo-cell, and the complete arrangement couples the output through to the connected device without having any direct electrical connection to it. This reduces the risk of problems with the "hot" logic that tend to plague electronic music systems, as well as eliminating the risk of electrical noise from the logic (or other more sensitive) being coupled into the audio signals of the connected instruments.

These differences in the input and output signals are all handled by the add-on interface.

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LIGHTS! CAMERA! ACTION!

Wipes, fades, cuts, flips... they're not Olympic high diving styles, they're features offered by Argis' new 'desktop presentation' software. Ben Taylor admires the show.

Lights! Camera! Action!

430/50 ■ Argis only, requires IBM ■ Argis/50 Marketing, Brooklyn House, 22 The Green, West Nyack, New York 10994-4443

Computer have long provided, slightly unfortunately some might say, that Desktop Presentation is only a small part of the greater world of 'Desktop Presentation'. The theme is that the design is the ultimate tool for converting your imagination into a contained audiovisual experience. Whether you're a graphics designer looking to make up a stunning demo of your work, or a businesswoman making a sales pitch, *LightS! Camera! Action!* aims to give you that ability.

LCA allows you to define a 'scene' of still pictures, sounds and animation clips. A sequence might be: (1) start some background color music; (2) display the logo of the 1st Mutual investment; (3) fade into a picture of a shimmering penny; (4) cut to animation of a water spout reaching with the 50, 50 facts with a diamond pattern effect to a picture of the ending up by the end.

In short, LCA is a tool for creating slide shows from still pictures and music, and it's not a full animation package in the sense of defining two pictures generating all the intermediate frames automatically.

Still crazy

LCA takes all images from any standard image picture file (or resolution, high resolution, HAM mode, the little-known 'Extra-High-Resolution' mode, and any interlaced version of these).

The standard LCA by IBM for 486 by 256 is medium-high and good display doesn't normally fill the entire large screen, but because the end result is supposed to be a 16-bit presentation, possibly for recording to videotape, LCA uses a technique called 'letterbox' to allow you to display images up to 512 by 512 pixels such that they could smoothly off the edge of the screen as a normal TV picture does. If for you create these zoomed pictures it your problem -

most just packages will only save in the standard size. However, Photo Point, the LightS! 1.0 digitizer and Deluxe Photo II can all work at the larger size. Different sizes of picture are loaded well, you can mix monochrome and ordinary color images, PA, CGA/EGA/1024 and VGA/1024/1024 level screens all in the same image, and they will be properly centered in the screen. You can even intercalate with video pictures if you have Genlock hardware.

Still can be displayed for any time that you choose - the fun of it all comes in how it gets to the screen. You can fade it in, 'wipe' it over an existing picture in any of 8 directions. You can gradually convert one picture into another with a 'dissolve', whether it via a pattern of diamonds or triangles which gradually merge together, or create a window within one picture and reveal a second one as it is. When one picture flips to another the transition is almost instantaneous, but the wipe effects are a bit juggy as they slide across the screen.

You can load the display into two 'multiple viewport' screens so that two pictures are scrolled together, each with their own color palette and/or color cycling effects active.

Sounds good

The range of sounds that LCA can play are geared mainly toward sound tracks created with the Argis Sound package, though any 'SMB' format picture file can be included. Unfortunately, this format tends to be compressed notes played through the sound chips, it cannot deal with digital sounds. There is no direct way of including, for example, an explosion sound at suitable points.

The music you can include in your presentations is likewise determined by what music package you own. Some being preferred, you can play the tune either as a one-off, or

repeating in the background until the video script ends.

Although you can't alter the instruments with which a sound score is played, you can change its pitch, volume and timing.

Animations

Provided with LCA is a utility called 'Grabber', a 'grabber' tool to allow you to put an animation together in a format that can be played smoothly. You really need a pointer to use it with Grabber running in the background, you press the Fire button to grab a screen, which is then added to the current stored set.

In conjunction with a point package, this can give you a slick way of doing simple animations - just grab each frame as you move it to its new position. Grabber stores the data in a compressed format, so you don't take up a whole screen's worth of disk space if there are only minor changes between frames. You can use this method with text to good effect, if you add one letter to a screen on text for each animation frame you grab, then the animation makes the message appear as if it is being typed in capital.

With a simple image, LCA will

GENLOCKS

A Genlock, constantly referred to in graphics circles, is a piece of hardware which gives your computer the ability to display graphics with a TV or video monitor's picture, creating the kind of effects you see at the Chart Show or Network 2 Genlocks (and around LCA) for the things, and then we come we know it for the 22.



■ The slide script editor written for LightS! Camera! Action! You can control the 'wipe' from here - the special effects for live pictures are listed in and out



GETTING GOING

Amiga's video card is a real beauty. It can handle up to 1024 lines of video, and it can handle up to 1024 lines of video. It can handle up to 1024 lines of video, and it can handle up to 1024 lines of video. It can handle up to 1024 lines of video, and it can handle up to 1024 lines of video.

display around half a dozen frames per second from 640x480 pixels.

The verdict

The major problem with LCM is text handling. If you want to make up text screens to introduce a picture, or even add captions to pictures, there is just no way you can do it. You have to use an art package to save the text screen as a picture, or edit the captions into the images, by hand. Obviously this takes up more disk space than text alone really deserves, and it is a major omission in an otherwise extremely well-designed package. The other annoyance, as has been pointed out, is not being able to include digitised sounds in a demo.

Overall, LCM is a package that is superbly simple to use and can create impressive selling demos of any graphic contents. It just lacks the flexibility, especially in its poor text handling, to be a vital business tool, and it doesn't really try to be a top-flight animation program. *Dechman Jelic*

GO FASTER STRIPES

When you start to put together complex presentations, particularly if you want to flip from one still to the next quite rapidly, you are going to start being frustrated by the fact that the Amiga's disk drives are slower than the speed of light. To load a picture from disk can take three or four seconds, which is therefore effectively the shortest possible display time.

To help minimise this, LCM has the idea of 'buffers'. You can have up to 64 buffers, each holding a picture, animation or sound screen in memory. While one picture is being displayed, you load another into a buffer so that when the time comes to display it, the results are pretty much instantaneous. The drawback is, of course, that you need lots of memory to hold one picture in reserve while another is being displayed. Even with 2880 you'll be pushed to buffer many pictures at all.

Once your demo is all finished, there is a stand-alone 'player' program so that you can distribute the disc to people without LCM.

Deluxe Video base board 21 is a more sophisticated tool in these areas, and can run on an unexpanded 1020, but is much harder to use.

However, any would-be artist will find it a matter of minutes to knock up an impressive demo, and simplicity is something to be highly valued.

features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

manuals

1 2 3 4 5

format value

1 2 3 4 5

for

- Simple to use
- Displays TV-size 'overscan' pictures
- Wide range of fade/wipe/zip effects
- Animation creator utility included
- Plus adds 2 different colour patterns displayed

against

- No way to add text within LCM
- No way to include digitised sounds
- Needs 1 Megabyte of RAM

CHINA



- If it's Tuesday it must be Wednesday... a World tour courtesy of Light Camera! Starting in China, a classical fade cuts to Manhattan's towers. A horizontal wipe takes you into City Paris - this doesn't use the multiple viewport features, so the palette of the New York picture has been merged up by the next picture's palette. The next fade into Holland, does use multiple viewports so the windmill's palette is correct as it wipes from the centre over the old picture.

CHRONO-QUEST



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You will be presented with many objectives, ultimately you will have to travel through time to collect the fragments of magnetic card to drive the Time Machine into the future. There you will have to... Meanwhile, the immediate objective is to find the time machine... Sorry, a more immediate objective is to find the room with the time machine in it... But its dark... very sorry, an even more immediate objective is to be able to see where you are going... 3 hours and 350 minutes and even more immediate objectives later, you are standing in the hallway thinking... helpppppppp!

ATARI ST/AMIGA/IBM - £29.99

Screen Shots are from the ST version.



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APRES MIDI

So you've got a headful of great tunes and a MIDI system — what happens next? Chris Jenkins explains a few tips of the trade for recording your inspiration, and how to make money from your compositions.

Over the last few issues we've looked in detail at the myriad low-tech things you can achieve with a computer-based music system, using MIDI and electronic instruments. We've explained the theories behind the software and hardware, and shown you how to set up a studio system.

So there you are, sitting in front of your computer and your synthesizers, fiddling to make a start. What on earth do you do next? As you go deeper into the province of recording and mixing, you'll have to keep remembering that this is a computer magazine! And bear in mind that your ST or Amiga can help you along with almost every aspect of creating music, from creating the original sounds to typing the labels for the cassettes.

Master tapes

If you create a wonderful picture on your computer, it remains fairly pointless

unless you incorporate it into a game or a demo of some sort. In the same way, a piece of computerised music is pretty useless until you turn it into a form where it can be enjoyed by other people: usually, an audio cassette, vinyl record or compact disc. Incidentally, this is also a popular way to make money out of the whole business!

You can always book time in a professional studio to make your recordings, but with plugging equipment rents it's now possible to build up a pretty good recording system in your own home.

Good quality recording equipment won't cost thousands of pounds, although the 24- and 48-track recorders used in large studios will stretch outside the budgets of most of us. 16-tracks such as the Fenber 816, though, are becoming pretty affordable, and remember that the classic Beatles album *Let It Be* was recorded on just two 4-track 1/2

you simply want to tape what you play live, any good-quality hi-fi cassette deck (preferably using metal formula tapes and Dolby noise reduction) will do the job. However, if you want to record complex pieces, you'll need a multi-track.

Multi-tracking

Multi-track tape machines allow you to make several synchronised recordings on one tape, listening each time to the previous tracks so that you can build up a complete piece working on your own. As we've remarked in the past, it's often best to buy second-hand, if you can find well-serviced equipment. Multi-track recorders come in many forms. Early models, such as the TEAC 1340/3440, used quarter-inch open-reel tape, and were intended to play 'quadraphonic' music — a fact which never caught on. Indeed, multi-tracks started to use them to multi-track, and you can still pick up these excellent 4-track



■ Bugganart Pepper's Lonely Hearts Club Band was recorded as a 4-track mix — state of the art in 1967. *Spinaltap* of the same year is re-released through newscasters, so there's no reason you can't multi-track your own concept album!

machines at around £500.

You'll probably also need an audio mixer, which will allow you to channel all your instruments into the recorder, then combine the results onto a stereo master tape. Mixers can be shockingly expensive, though there are cheap models from Genie, Icon and Boss. Look out too for 'family mixers' which are designed for use in discos, but which can be adapted for recording uses. A popular alternative is the Portastudio-type combined



■ Yamaha's idea of a simple 16-track home studio, as featured in the 1988 PC show. Does your bedroom look like this?



■ Yamaha BF100 4-track cassette mixer/recorder, at around £1500, this is a good entry level combination console for the home producer.

multi-track recorder. Tascam introduced the concept, and prices now start at around £755, including the Portastudio 2424, Tascam Portastudio 2424, and the Tascam 2424. Most of these units feature four to six input channels, so if you want you can plug in an entire band. Each input channel has tone

controls for bass, treble, and sometimes midrange.

Some portastudios also feature effects sends. These allow you to wire in a digital reverb or delay unit to "treaten" the instrument sounds. Predictably, there are now 8-track cassette portastudios on the market,

produced by the and Tascam. They both cost around £1500, which sounds like a lot, but is probably the cheapest way to get into 8-track recording. For comparison, a full-size tape 8-track recorder such as the Tascam 2424 would cost you around £1500, and a suitable mixer around £450.

Your computer can help you at the mixing stage, too. Systems such as Magix and Master can allow your 512k card some the Analog to digital and digital mixer settings for each channel, allowing you to get a perfect mix every time. These systems, though, only work with pretty sophisticated hosts incorporating "mixer panel" features.

Syncronisation

Another major problem when computers meet tape recorders is in track synchronisation. If you have only one synth, but want to record a piece of music with several distinct sequences, how do you synchronise them on subsequent takes? Counting yourself in and hitting the PLAY button at the right time rarely works!

The solution lies in boxes, such as the Rane RME-01 (Rane/MDI) synchroniser. This £129 unit converts

SYNC OR SWIM

Robert Stone software computers - both to Microsoft's SuperCard and 2424's 2424. It's a small, rack-mountable unit with a 16-bit digital-to-analog converter and a 16-bit digital-to-analog converter. It's the main tool with the Rane RME-01. It's a small, rack-mountable unit with a 16-bit digital-to-analog converter and a 16-bit digital-to-analog converter.

COMPOSITION TECHNIQUE

Without going into too much superfluous detail about compositional theory, let's assume that you have your own ideas about the style and character of your music. Naturally, recordings are built up from the bottom drums first, then bass, then chords, melodies, and finally the vocal (if any) and accompaniment. Ideally, you should record with no more effects than are needed to get the sounds on tape with good level and tone control. The effects should be added in the final mix.

In practice, unless you have stacks of equipment, you will have to add some effects as you record: maybe a bit of reverb on the drums, digital or tape delay on your vocal, a touch of bass on the vocal. Remember that many effects units, such as the Boss RE-201, can be controlled by your sequencer, changing effect type as and when needed in the piece. By mixing and recording the multi-track (or editing and re-creating your raw sequences) you can change the entire sound of your music. Study the sounds and techniques used on other and other records, then add your own ideas.

PING-PONG RECORDING

You can build up complex recordings on a small multi-track by "ping-ponging": start by recording on tracks one, two, and three. Record these onto track four, and your first three tracks are free again. Record on tracks one and two, and re-record these to track three, then fill up track five, then track six. If you also add new bits of music live on each take, you can end up with at least ten tracks on your 4-track machine.

You can apply the same sort of principle to track bouncing from one simple stereo cassette deck to another, but the recording quality soon becomes unacceptable.



■ 2424 24-track mixer, ideal for the 8-track studio.



fishermen, recording systems you find can tell you things about the environment, such as beach plug blocks, waves, beachcombers, beachcombers, islands, and of course an island for you and speakers to hear what you're doing. It doesn't tell anything and speakers, and do to start off with, but you can (know) what speakers. If you push the limit too high, to think of something, it's not speakers, such as "Yamaha 100 100 speakers."

HMII then pulses into an audio signal, and vice-versa. At your first track of music is recorded, the HMII-32 really, really pulses from your software inquiries, and cuts out a series of high-speed beeps which are encoded on a tape track. If the tempo of the sequence changes, the beeps will speed up or slow down to match. On subsequent takes, the HMII-32 reads the audio pulses, sorts your tape-degeneration track, and transforms them into HMII clock pulses which your sequencer can respond to.

A single bassline that can be programmed to generate a 24-note scale, pentatonic scale, or major, allowing you to synchronize drums, Roland and Korg drum machines such as the TR-808 or TR-909, drum machines, and several other music computer boxes. A similar track may also be used to synchronize part terms, programmed into the MDI drum machines, although such sync word also, such as the Roland MT-52 and ET-10, now come with built-in drum sounds which you can play with your sequencer. There are plenty of great sequencers, such as the Roland TR-707, TR-7070, and Yamaha RX220, which allow you to create intricate, multi-patterned, and songs in real, step-by-step fashion.

Soil on the subject of tape synchronization, you'll also hear talk of SMPTE (Society of Motion Picture and Television Engineers) synchronization. This is a complex digital time-code system designed to sync music to video, and although SMPTE/MIDI units such as the XA 08000 are becoming less expensive and straightforward, they're a bit beyond our scope here.

Continue to transport:

When recording music, the best place is to plan out in minute detail what you're going to do, before you do it. Many software sequencers allow you to enter synth patch numbers, track names, and even in some

cases like mine, if you don't knock them off, we'll make a back stop and hit it in all the remaining states, and sound policies, the order in which you mean to do the laws, the "unwritten" constitution, the law of the land, and so forth. That way, you'll stand according to the wrong track and going out two heavy war."

Let's assume you've recruited your peers, pulled all the necessary efforts, and issued it down into a strong member base. Unless you can afford a quarter-million, mastering something such as the IBM 807 or Trucom 20, you will probably have missed it with a standard model. Certainly, this is true, because everyone has a cassette player, and not every one has a quarter-million dollar machine. So now what are you going to do with your money? Maybe you can just use it for your own entertainment. But enough, that most of you will want your performance heard. There are loads of possibilities, but, as with any other venture, it pays to do a little research in advance.

References

If you are interested in the production side of music, rather than performing, you can advertise your services as a studio facility. Why not enjoy back some of the money you've spent on your equipment? Advertise in local papers, or publications such as *Music Business* or *Music Man*.

If your clients have access to a computer, check the convenience of doing the programming at home, then loading their data and taking in the data disks to finish the recordings. The going rate for a 4-hour visit is about \$2 per hour, \$8 visits \$3, and \$6, visits \$10, depending on the amount of gear you have to offer, the area, and the amount of time a hand used to record working.

If you want to promote your own music, start out the most promising market. Let's say your interests are in soul music, and your ambition is to

have a hit single, appear on Top of the Pops and be noticed by schools. (And why not?) The traditional method of getting ahead is to make a demo tape, send it to a record company, and wait for the contract offer to come rolling in.

Somebody does that, you will probably have to go one better if you don't want your musical efforts to come up in the 'stupid pile'. Some basic rules: select three (magic number) of your best pieces. Don't do any cover versions, and don't use the style that's much, much companies look for is a strong sense of identity in an initial. Make sure your cassette is well prepared, with real labeling, and is accompanied by a good photo of yourself and/or your band. Don't go away for the temptation to include a 74-page artistic manifesto with your tape - it'll end up in the bin.

Mamma dropping

There are several invaluable sources of second company contacts. The last is the *Manitowoc World Company*, published by Southgate 215 583 4411 which is an annual publication listing second companies, including studios, manufacturers and other industry services. It costs £15 from bookshops, or your local library should be able to get it. For more direct information on second companies, see the *Manitowoc Music A&R Ltd. Available from Making Music magazine 01474 17000* for the price of a big issue. This lists second companies major and minor, their latest releases, major lists of music they're looking for at the moment, and addresses and phone numbers. Personnel change lists will circulate rapidly so don't expect the list to stay up to date too long.

If you're genuinely interested in a new music career, consider pressing your own single. It can work out fairly cheaply - around £400 for 1,000 1-inch singles, with white labels and sleeve artwork. Discuss artwork

coloured labels and so forth all start to bring up the tents, but that's not necessary if your records are going to be sent out to music magazines, radio stations, TV stations and independent local radio in the hope of air play (refer to Music Week Directory again).

The two great advantages are (1) record companies will take you more seriously, and (2) you may get radio airplay, which you will never, ever, get with a cassette demo.

If you are attended it less obviously commercial music – say New Age or folk – make sure to approach record companies specializing in those fields. There's not much point sending a demo of a folk, tropical or ambient piece to a Thrash Metal label.

JUNGLE BELLS

It's possible, of course, that you're happy to stay out of the spotlight, and would like to make a name for yourself in other, less commercial, outlets. This can be staggeringly remunerative: one of the members of their band Phoenix 17 months ago is making £25,000 the five days' work on a car company's website. It's a damn good job, but of course this sort of work demands the highest standards of professionalism and working quality. It's no good saying, "I'm coming in to do it for aggrandise. Again, the Miami Beach Observatory is a good source of contacts; dozens of single companies are listed, and if you need more advice on this area you can contact the Magazine Lines on 02-921-0410.

In the meantime, listen very carefully to the soundtracks, ad jingles, TV theme tunes, and so on. Approach organizations such as drama groups, hospital radio stations and 'talking magazines', and see if you can offer them your musical services. With a few connections under your belt, you'll have a better idea of how the market works.

Many musicians make an excellent living out of library music. Companies such as BMI and Motion make efforts of instrumental music available for use by all sections of the media. If they like your music, you can bank and take in the royalties as your music is used in everything from radio spots to commercial to feature films.



FUNNY BUSINESS

Cartoon drawing is no laughing matter. Ian Bennett explains the ten steps to becoming an electronic Bill Tidy. All you need is a paint package, a computer, and a little inside knowledge.

Have you ever wished you could draw your own colour cartoons, or even more exciting, comic-strip adventures complete with a D.I.Y. superhero of your choice? Armed with your superpower 35 bit paint package of your choice, and a bit perhaps a lot of time, you can do just that. All the cartoons in these pages were hand drawn using a palette of 16 colours. In fact, the artwork was on Amiga 500 with Deluxe Paint 2, although they are all fairly simple and basic, and almost any paint package on either ST or Amiga would do.

So just how do you go about drawing your own cartoon? Let's look at the stages involved in drawing the first frame incorporating our somewhat sinister but even so dynamic hero, Virus Destroyer, or 'VD' to his friends.

(1) Preliminaries

Unless you are already a cartoonist or comic artist, begin by



studying lots of comics noting the use of bold colours.

when, shading and all other elements that combine to create a single frame.

Study our hero then create your character as you wish for copy artist and then make a basic pencil sketch noting your main colours, shadow areas, action lines and speech areas. If a series of frames is involved then composition of the whole-page comes into play... but that's another story!

(2) Switch on

Before loading your art package ensure that you have a supply of ready formatted disks to save your work. It is all too easy to get carried away with the creative urge and forget the essentials, ending up with nowhere to save your labour!

For your first attempts, you will probably find it useful to draw the block outlines for the cartoon on a piece of paper. This will give you a size guide for positioning the different elements of the picture at the right place on the screen. After a while you'll be able to draw the picture directly on the screen.

Have all your reference books, colour charts, preliminary sketches and inspirational work handy. Clear away the full empty coffee cups, put out the cat, the radio, the TV, settle down and switch-on.

(3) Palette

Setting up a definitive palette at the start is not vital, since you can always change it, but preparing major colours like the red, yellow and blue of R.D.'s uniform is advisable. Set the screen background colour to a fairly neutral, neutral shade to avoid distraction... you could be in luck if the screen for some hours, maybe days. Don't have a black background because black is needed for drawing lines, and white for speech balloons and highlights. If your character has body parts showing, then a flesh colour human, also or otherwise will be needed. Always try to have seven colours for the various shades of the main areas that will

VIRUS DESTROYER

HAVING HACKED...

BEWARE



■ 1 - The first sketch for our super-hero, Virus Destroyer, in VD to his friends.

come up as a drawing progresses. Be prepared to continually modify and re-use shades as you proceed. It is one of the joys of computer art!

(4) - Box it

Usually your cartoon or illustration will be made in a box. Using a fairly wide square brush and the bottom rectangle command, set up your drawing area to whatever shape is required. It is important to remember that if you



WHICH ST SOFTWARE?

For more information contact:

ST:
NorthFront (0444) 225 95
Digital Graphics Arts
120
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120
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ST (Distribution) 121 75

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TIPS OF THE TRADE

Solid black outlines and dark shadows play an important part in most comic pictures. Look at the way simple black lines are used to denote muscles, the intensity on the brows or eyes. Look for areas of shadow particularly under the neck, arms, hip pads and also the way that thick black lines and shadow combine to create that super-heroic look. Look closely at the examples shown on these pages. Shadow is always evident in body parts behind the main action, as in the VD that frame with the rear arm and rear hand leg.

The use of solid black lines minimises the need for complex colour shading and if you have only 34 colours as with the Amiga, medium resolution or ST low resolution, they soon get used up. In the VD that frame there is only one shade each of blue, yellow and red used. Black shadows and lines combine to create the 3D effect.



AARGH!?

intend to have explosive action, body parts or speech breaking out of the box boundaries, then you must leave sufficient space round on the screen to accommodate it. You can also test the need for that preliminary paper sketch.

(5) Let's draw

At last! If you are keen on art, you are presumably already have some knowledge of perspective, composition, figure work etc. If you haven't, then you would be wise to obtain some from a decent drawing or sketch book. M&M comics and Cat from space can sometimes find the general lines of drawing. It is easier to learn to draw fast and then to learn to draw 'correct'. Getting a 3D effect is easy when you know how, impossible when you don't.

Having set up the drawing box select a few lines, colour black and pick your starting point. Proceed to 'sketch' with the mouse. Keeping your eyes on the screen and with fairly rapid movements, outline the main parts as you would with a pencil on paper. If drawing an action figure as our 'old' is, start with a 'static' pose which captures the main line of movement. Basic background details can be put in to complete the rough sketch, using the free-drawing command when you can, but otherwise with keyboard sketching.

Don't waste time at this stage removing all unnecessary or incorrect lines. Sketching with the mouse takes practice, so do not give up!

'Finishing off' is the next step, in putting a body and relevant clothing, uniform, gauntlets, weaponry etc fully roughly sketched into the disk file. If you feel it is a character type, there will be lots of curves to draw for baggy trousers an so on. You could try to use the curve drawing commands of your art package, but many people prefer to draw these free-hand instead since they will probably be redrawn when the detail stage is reached later. But feel free to experiment for yourself.

In drawing a face, you may wish to insert a centre guideline through the nose and also an eye line passing through the centre of the eyes. These lines can easily be removed by 'overdrawing' with the relevant flesh or other colour once the mouth, nose and eyes are finished.

Weapons will usually be based on straight lines, and a simple set of line and box commands can be used to create the weapon's outline.

Now before you do anything else, SAVE IT!

(6) Now undraw

After the end of the last stage, you will have a mass of lines on screen. Inexplicably if there is a background (scene) - the same of which is only

account to you. Hidden amongst the spaghetti will be your lines designed to reveal himself. Observe! And this is fairly massive - 140.

So now, an undraw (select) back ground colour, the largest brush size you need and 'do an over' of the obviously unnecessary lines. After removing the major lines, eg, the shirt from your stick man, use the magnify command and zoom in to remove other lines. Keep removing lines and doing minor retouching until you are left with a figure that's rough around the edges but a pretty reasonable outline sketch. Save it again and take a break!

(7) A bit of colour

Adding some colour at this stage will let you feel that you are getting

packages with Undo command!

Do not add too much colour at this stage. Start with the main areas like the head, chest and arms. You can also insert the main areas of shadow such as rear arm, raised rear leg and ribs.

(8) Magnify and detail

This is the stage at which the red drawing takes place. For the figure, add detail from the head down. Use the magnify command, a small brush and first correct and establish the head shape for the head. Add the hair, hat, main head shadow and shoulder areas.

Working at increased magnification allows detailed work on the facial

WHICH AMIGA SOFTWARE?

The major Amiga art packages are:
Deluxe Paint II (Electronic Arts, £50.00)
Deluxe Paint II Electronic (Electronic Arts, £50.00, needs 2MB of RAM)

Big Paint (New Line, £60)
Painting (£20.00)
Paint-Plus

Comma

Express Paintbrush
 Paint-Plus Center

Paint-Plus Center



4 - 7 - Start by drawing the main lines of your figure in about 10 seconds

8 - 9 - Add the outlines for the limbs around the main lines



somebody fast. The final fill command can, in seconds, change a mass of lines into a mass of coloured blobs. But at least, you will know what the blobs are. Check that all lines join up where necessary and use the magnify command to examine all dubious bits. A slightly misplaced joint, especially after free-hand drawing, is extremely difficult to spot. You will soon know if there are any gaps that you were unaware of when the whole screen fills with the wrong colour. Thank heavens paint

and other features. The amount of detail depends greatly on the first purpose for the picture and its ultimate use. One of the arts is cartooning, it is to only put in sufficient details to create the impression required. Many too cartoonists use very few lines to create their figures with, and few detail is lost anyway if the results are printed small.

Detailed work ultimately comes down to using the magnify command and small brush to work pixel by pixel. Good art packages display the



10 - 11 - Use, Dr. Frankenstein... colouring in the head brings friendly 7.5 to a semblance of life. The mouse and palette reveal this as a Deluxe Paint II production, but you could use any art package on any machine.



■ 9 - Add in a background colour and some black raster lines

magnified and unmagnified portions on screen at once — always keep an eye on the magnified image to see the effect of your actions. Repeat this detailed work for the rest of the picture, using the preliminary sketch as a basis and redrawing, correcting and breaking as necessary.

At the risk of becoming repetitive, **SAME IT NOW!**

(9) Backgrounds

Having previously established any background details with the initial sketch, everything now comes down to the magnify and detail procedure. Don't be afraid to rub out detail; your preliminary sketch was only a sketch. Wiping out of this stage is also necessary to remove unwanted pixels left from the raster sketch.

The amount of detail which goes into the background will depend upon

the final purpose for the artwork. In the 'clunky street' scene very little background detail was necessary despite the fact that the black screen shows a landscape scene. The foreground detail is the main focal point of the picture.

If you wish to know how much detail to put in, again look at various comic strips especially the standard Superman and Batman type. You can see quite often that background details like buildings are represented simply by outlines with various colours used for obtaining depth. Real detail itself is strictly limited.

(10) Speech and lettering

Before going any further, make sure that you have timed the frame to fit. You are almost finished... it's only to

WASTE NOT WANT NOT

Look for short cuts that allow you to reuse things you've already done. All pixel packages have a copy command. If you spend some time partitioning a left eye, copy it to a blank area of the screen, then reflect it for use as a right eye.

Arrays of polygons, and other things among others on the ST, have a particularly powerful copy and move function called 'brush-in'. You can pick up any area of the screen and use that as a brush to draw with. The brush can be flipped, rotated or related so without you needing to find a blank area of screen to use as a workspace.

Looking at the completed strip at the end, the computer and telephone boys were all done with a 'lay' brush, and the second command was used to draw underneath and cut them Arthur's arm with the brush.

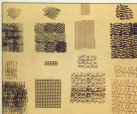
If Leonardo had drawn an design perhaps the Mona Lisa wouldn't have had that big solid smile!

Take notes now

After drawing, consider the location of any lettering and speech balloons required. If you are uncertain where to locate the balloon then draw it separately, save it as a brush, and move it around the frame until it looks good, then click the mouse to fix it in position. The balloon shapes can be whatever you wish depending upon the desired effect. Freehand drawing will often give a better cartoon effect than using the shape commands, but boxes and ovals can be useful.

As for lettering, will play around with whatever fonts you have available. Experiment with bold, italic and any other features. The E.D. strip has a variety of fonts and spacings.

If the words are not large enough then you can use the art package's stretch, rotate, reflect and other features to get the effect you want. Always fill the speech balloon with the background colour before inserting any lettering. Otherwise, you are left with all the centres of the letters to fill in individually.



■ A selection of halftone patterns you might like to recreate and use to give texture and depth effects to areas of your cartoon. Select a pattern, modify the background colour to match the destination area, and use your pixel package's copy commands to splash it over the parts you want.

SHADY BUSINESS

To break up a solid block of colour, some form of patterned 'halftone' can be used. Different colours don't always go too far! This is where pixel packages with pattern brush commands can really come into their own. Matching areas halftone, stippling and all the usual pen and ink effects can be reproduced on screen using the brush. In the E.D. strip you will see a lot of simple shading created just this way. It also helps to maintain the standard 'brown' comic book, as opposed to a greater computerised image. You can see an example of this by the doorway of the street scene in the finished E.D. strip.

Events the background colour is the same as the area to be shaded or drawn onto the main background colour. Using magnify, if necessary, hatch a small area of screen by hand-drawing with the style of shading required. In the E.D. strip, the examples are a fairly rough effect, but you could use also more lines. Cut out the centre portion only as your brush, which prevents any edges appearing. Work with the brush over the area required building neatly or overlapping where necessary for depth or effect. To remove the squared step effect at the edges of your shading, switch to a standard circular brush with the right background colour and proceed to shape the edges as required (as in the 'bushy' frame). By overlapping, rotating, stretching or rotating the halftone brush as needed a wide range of different effects can be produced. Experiment!

Finally, bear in mind also the location of any lettering and speech balloons where you will put in later. It is a waste of time spending hours creating a finely detailed corner of the frame only to cover it up with a large white speech balloon.

THURSDAY

NIS the
GN
AND FROM

EMERGENCY! THIS IS
BOBBI!



■ 4 - Drawing in the frame outline with a thick brush, leaving room for text in the bottom.

Finally, if you have not already done so, add the background colour for the box. You should have left yourself at least one shade on the palette.

When, as necessary, you will be amazed at the effect that different colours in the box can have on the final impact of the frame.

Up, up and away

So there you are, your own drawing box. All that remains now is to pre-

pare your creation for posterity. If you don't have a colour printer you can photograph the screen, using an exposure time of about 1/50 a second which smooths out the scanning lines on the monitor display.

Have fun... it's what comics and cartoons are all about!



■ Picturesque language... a variety of speech bubbles. Next you want to emphasize you can be put in one of the more exorbitant shapes.

VIRUS DESTROYER

VIRUS DESTROYER
THE SCREEN...

THE SCREEN IS A VIBRANT
AND COLORFUL
AND THE SCREEN IS A
VIBRANT AND COLORFUL
AND THE SCREEN IS A
VIBRANT AND COLORFUL
AND THE SCREEN IS A
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VIRUS DESTROYER
THE SCREEN...

THE SCREEN IS A VIBRANT
AND COLORFUL
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AND THE SCREEN IS A
VIBRANT AND COLORFUL

KABOOM!

VIRUS DESTROYER
THE SCREEN...



VIRUS DESTROYER
THE SCREEN...

VIRUS DESTROYER
THE SCREEN...

VIRUS DESTROYER
THE SCREEN...



VIRUS DESTROYER
THE SCREEN...



KABOOM!



VIRUS DESTROYER
THE SCREEN...



VIRUS DESTROYER
THE SCREEN...



VIRUS DESTROYER
THE SCREEN...

Out of the wireless void comes a new kind of newspaper, from initial sketch to final coloured screen.

NEW FROM

ROMANTIC ROBOT

MULTIFACE ONE, the MULTIface InterFACE, was a sensation when originally released for the ZX Spectrum four years ago. MULTIFACE TWO, for the Amstrad CPC range, followed 2 years later — same pattern, same success. Now the time has come for the MULTIFACE ST — the BIG brother to the MULTIFACE family. Same pattern? Yes, and with even more facilities! So, what can MULTIFACE ST do to make an AT&T ST owner's life so much easier?

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The **MULTI TOOLKIT** lets you inspect and change in hex, decimal and ASCII absolutely everything — including the protected ROM and ROM0 registers! You can **POKE** infinite lives, examine programs, fill RAM, find, replace strings, even in /o instructions, etc.

Being a hardware device, 'a magic twin' MULTIFACE can back-up whatever you wish, as many times as you wish. HOWEVER, to prevent any piracy, which is illegal, the MULTIFACE MUST be attached to run programs it saved! MULTIFACE will be available from November 1988, making it an ideal Christmas present for any Atari ST owner!

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DTP UPDATE

Since our mega-survey of ST and Amiga desktop publishing software in issue 2, there have been a couple of new developments. Ben Taylor examines Shakespeare 1.1 for the Amiga, and Simon Williams checks out the new version of Timeworks DTP on the ST.

AMIGA

SHAKESPEARE 1.1

£148.85 ■ Amiga only, all models ■

Cloudhall Ltd, Domesad House, 40 Hazelwood Road, Northampton NN1 1LN (0604 238211)

Shakespeare is a relatively new Amiga DTP package, which missed out on our grand survey in issue two. The newly released version 1.1 seems much more robust than the original 1.0, and certainly merits a closer look. (Sadly, lacking any!) Shakespeare - the Page Integrator, the program claims to be particularly strong in the area of colour DTP. And after all, colour is the Amiga's strength - what's the point of being able to print multi-coloured pictures on art packages when you can only print black and white on a DTP package?

Shakespeare will run on an unmodified A500, which is a pleasant surprise, in view of the higher-powered Amiga packages (which rarely cost £120), although the manufacturers recommend IBMi for various reasons. The package comprises two disks, one being the program disk and the other being a related selection of tutorials and Clip Art covering computers, road signs and holidays.

Flowing prose

There's a curious mix of the conventional and the unconventional throughout the package: as you expect, before you can place any items on a page you first have to define your page size, and then create some empty boxes to put the text or graphics in. There is no distinction between the two items - you've only got one text/insertion tool, and either text or graphics can go into them, although the two can't be mixed.

You have to 'insert' all the text and graphics, first, before you place them in boxes. On a menu (currently named 'Chart', you click on all the text and graphic elements, load them into

memory, and then place them one at a time into their boxes. At least this way you know when you are going to run out of memory for your page before you start to say it all out.

Text flows into the boxes quite readily, and you can set your font before or after. You are restricted to the font sizes supplied on the disk, which range from 6 point to 36 point in various typesets. There are 72 points to the inch, by the way, so 36 points is about half an inch high. This isn't very large for a headline, so you'd have to export larger sizes as graphics.

One annoying feature is that imported text loses all its bold and other emphasis commands, no matter what word processor it was prepared with. You can use the editing facilities with Shakespeare to retitulate whatever you want, and you can mix any number of different styles, fonts and sizes in a text box. Text can be edited directly onscreen within a box, unlike Page Setter and Clip Artist where you have to go into a separate text editor.

Graphics

To import graphics, they should have been seen as a 'burst' from an art package. This format allows you to move and crop the graphics after importing it. There is no graphics editor within Shakespeare for knocking up quick graphics, nor are graphics drawing tools at all. You can't draw circles, a rectangle has to be an empty text box with a border, a line

- An overview of the full page - you can't edit the page on this screen



■ Shakespeare's editing screen

■ The column rule is actually a very thin blue bar

POSTSCRIPT

When getting set up for Postscript, you'll find a number of useful hints and tips in the book. It's a good idea to print out the book for you to refer to. The book is a good reference for the Postscript language, and it's a good idea to print out the book for you to refer to. The book is a good reference for the Postscript language, and it's a good idea to print out the book for you to refer to.

Toolbar:

■ Edit text & modify box
■ Insert text box between two existing ones
■ Bring to front
■ Move to new page

■ You can overlay one picture with another, even if they have different colour profiles.

ST

TIMEWORKS DTP £99.95 ■ ST only, all models ■ Electric/GST, 8 Green Street, Wellingham, Cambridgeshire CB4 5JA (0954 612558)

Timeworks DTP was designed to be an inexpensive Desktop Publishing program to rival more costly offerings like Ventura Publisher on the PC. It was released in issue 2 of Format, but since then has undergone some improvements to raise its version number from 1.05 to 1.07. The price remains a very modest £99.95 (a DTP £99).

The improvements range from more accurate line-art rendering, to the ability to print a PostScript file to disk. This last feature is not everything you might expect, though, as you can only print to disk if your ST is equipped with a hard disk. This might be a nuisance on the lower memory 5120 and 10240 SAs, but there seems little reason why the file conversion routine should be adequately handled in memory on the Mega. The main advantage of printing to disk is that you can produce top quality DTP pages without the necessity of expensive hardware such as PostScript laser printers... and hard disks!

Extra file compatibility

The problems experienced with loading of text in the earlier version seem to have been sorted out, and you can now specify a leading smaller than the point size of the text. Most of the other additions to the program are to increase the level of compatibility between the DTP and text and graphics programs. Word Perfect has been



The suggestions from Design Office software also loaded directly into Timeworks DTP.

Image is from 1280 size, and is an example of a graphic image imported as a DTP file.



■ A page, containing graphics from a variety of different packages, all printed out under PostScript.

TIMEWORKS DTP V1.2

The sample page above consists of the two images (the digitized version of the famous Mona Lisa picture, the image was made from about 100,000 dots) and a graphic element from within the package. They have all been imported into the program. The imported page has been saved to disk as a PostScript file and printed afterwards - noted for printing rate of 200 pages.

— The image was imported from 1280 size as a DTP file.



added to the list of supported word processors, so if it's not possible to take a text in its file format. On the graphics side, the screen font format has been recognised with that used by Core Draw 2 to make import of these pictures easier. Both these two additions seemed to be geared towards the American market - since there are more STs in the US than there are in the UK, it might have been better

for GST to work with Amos or Pictorial-compatible, for instance.

The other interesting addition to Timeworks DTP is the ability to print in landscape mode. This means printing along the length of the paper rather than across its width and is particularly useful if you want to print a Double Page Spread (DPS) which will eventually be folded to produce the finished document. Since the paper still moves through the printer in the same direction, this means printing characters sideways down the page.

On appeal

The original verdict on Timeworks DTP was very good, with particular praise for its handling of long documents. This verdict still stands, with the improved features adding to its value for money. There are still areas, such as printing to disk on nonhard disk SAs, which would benefit from further work, but with a policy of continuous improvement, no doubt Electric and GST are looking at these.

features	4.0
performance	4.0
ease of use	4.0
documentation	3.0
format value	4.0

ALREADY THERE

The original product already has many of the features you should expect from a serious Desktop Publisher. It even GST to provide a WYSIWYG display of a portion of your finished page, but can also show reduced size displays to give an impression of the the layout of the entire page, or a DPS. Text can be imported from a number of leading ST word processors, maintaining formatting commands and some text effects, like bold text and underlining. Similarly, graphics can be imported from most of the popular drawing packages, including Design Office and MacDraw. Timeworks can work in monochrome or four colour medium resolution displays, and the screen graphics of Timeworks are automatically converted on screen.

The main advantage of Timeworks over most of its rivals is its ability to handle multi-page documents with ease. It does this through a system of 'documents' which are you define a particular set of text characteristics and assign them a name for a particular part of your text (like 'headline', 'caption' or 'body copy'). You can then tag text within a document with a given style, and it will take on the complete set of attributes it has.

The program is designed to print on any printer from a 8 pin dot matrix, through 24 pinners, the Apple and HP lasers, up to a PostScript laser which can use the time as much as an ST4. You can only install a single printer driver at any one time, which means you can't run a draft dot matrix as well as a final copy laser.

The manual runs to 230 pages, but has no index, and the original program came on four disks which require a fairly sophisticated, but easy to follow installation routine.

ON THE UPGRADE

If you're on version 1.05 of Timeworks DTP you can upgrade to the new version for next to nothing. Return your current disk, with a cheque to Electric Distribution at 8 Green Street, Wellingham, Cambridgeshire CB4 5JA. If you have registered with Electric's Software Service, with £4.95 on the cheque, the price is just £20.00. That's well off well for a run of five disks and a short document of the new features.

Syntax

100

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1100

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11

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MENACE



PSYGNOSIS

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ST - £24.95, One October.

The first release from Psygnosis's new label Playlapse is a scorching shoot 'em up which betrays the unmistakable influence of popular arcade games like *Nemesis* and *Salamander*. *Menace*, originally known as *Draconia* but since renamed, provides some of the best arcade action yet seen on the Amiga. First releases of this genre have been lacking in gameplay but *Menace* points the way to a rozier future for Amiga gamers with its arcade quality graphics, sound and, above all, exceptional gameplay.



As you've just destroyed a score of aliens and it's time to reap the rewards.



A huge space ship in your transportation to Draconia. Don't hit it or it'll be a problem.

AIM

Far into the future, six feared tyrants have come together to seek vengeance on the Universe, living matter they have destroyed, the planet Draconia has been destroyed. All the other inhabitants of the Universe are lost, their fate unknown. Something has to be done to save the people of the Universe and after much deliberation, guess who has to go in alone in a single seat fighter, against impossible odds, and destroy Draconia before it is too late. Oh, you are clever...

STRATEGY

The gameplay is fairly straightforward, using either a mouse or a joystick to guide a small fighter through six levels of increasingly difficult stages. As usual your presence doesn't go unnoticed, and the inhabitants of Draconia shoot everything they have at you in one from your attack after another.

Each of the six levels moves the battle into a different area of Draconia, from the exotic landscapes of the Sea of Kanaugh and the beauty of the Temples of Wain, to Carnegie Hill, which looks more like a scene from *The Godfather* than a planet's surface.

Menace features over sixty different types of alien, all of which are hellbent on your destruction. Most can be disposed with fairly easily with a few quick blasts from your ship's lasers but others are more stubborn. To increase your chances, extra weapons can be collected and recharged on route, by shooting the bonus score icons at the end of each stage. Weapons include high power lasers, rapid fire cannons and interlocking outcannons. Add both lasers and cannons to your ship and alien-wasting moves into top gear.

End of level guardians are the last challenge on each level and fire multiple lasers in your direction. A mixture of deliberate firing, turbo mouse handling and a lot of luck should get you past the guardian and onto the next level. Ticking up for three minutes is the norm of the game in *Menace*, though, as going up against a guardian with a single gun laser is bad news. Before you reach the end of a level, aim yourself to the left with your cannons, outcannons and lasers, and recharge your shields to the maximum level.



1. Missing this alien shouldn't be much of a problem...



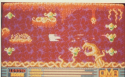
2. Oh! What's going on here then?...



3. Points spinning rapidly, these aliens are no push over.



4. This pair 'ship hasn't eaten for days - and you're on the menu!



5. Carnage Rift - a pleasant place to spend your holiday.



6. Menace of the Mutant Tentacles



7. Cosmos and Lovers are both out as you come up against more opposition.



8. At the end of level confrontation, it's you or him...



9. The confrontation ends in explosion as the guardian's superweapon.

CONCLUSION

Menace will have you hooked for hours on end. The addictive 'just one more game' feeling hits you every time. The mixture of smooth quality graphics, sound and gameplay make this one hot shoot 'em up. While Menace does nothing to promote intergalactic peace, the sheer satisfaction of watching alien ships fly is just too good to miss. In all, a recommended dose of pure arcade violence - just what the doctor ordered.

Jason Hoffman

GRAPHICS AND SOUND

As you would expect from Progress, Wynace seems lighty in the graphics department. The background and foreground graphics in all six levels are some of the best seen in the Amiga, with the desaturated colors, rolling fields and jagged alien skulls of Carnage Rift being beautifully stomach churning.

The graphics and animation of both your ship and all the alien ships are all up to the same high standard, making Menace one of the best presented games available. Even the introduction is impressive as a huge space ship moves smoothly across the screen filling almost the entire play area; a truly impressive demonstration of the Amiga's

graphic capabilities. Loading time is exceptionally smooth, with not a glitch in sight.

The soundtrack is equally brilliant, with a heavy rock sound track reminiscent of both Alien and Starblaster. It's rare to find a game soundtrack that suits the mood of the game, something which game designers too often overlook. Playing a job title silly while wailing out a case of alien doesn't compare up the right atmosphere. The overall feel of the game is enhanced still further with voice-mimed and sampled speech and sound effects. Feed the sound output into a hi-fi system, turn the volume up and the lights down and the atmosphere is electric.

with graphics



moving graphics



soundtrack



looking inherent



overall 90%

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ENTERTAINMENT



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and sound
on the box
following
to take
the game
around
on their
work to
providing
the
good
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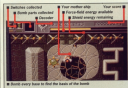
BULLFROG PRODUCTIONS/ELECTRONIC ARTS

Amiga - £24.95. Joystick only.

ST - Due early 1989.

Although Powerdrome was supposed to precede it, recent delays have meant that Fusion surfaces as EA's first release developed entirely by U.K. artists. And the team that brought you *Enlighten-*

ment - Druid II have brought with them much of the look of that game. However there's not a mag-size in sight here - we're talking serious annihilation as you try and construct and then detonate a bomb.



GRAPHICS AND SOUND

Despite an action window only a little over half the height of the screen, and uneven parallel scrolling, Fusion's graphics are unquestionably finely crafted and feature probably the best coloured landscapes you'll see. Each level is a mix of elevations and plains through which you can glimpse gleaming scrolling pools of latticed colour threads. These is the subtly animated

enemy centers and you have a rich variety of terrain, complemented with great care and attention to detail. Full eight way movement completes a very pretty picture.

Sound is confined to an ever-present background drone, which tends to detract from the graphics at hand, and the usual kind of spot effects of lasers and explosions.



GAMEPLAY

You begin Fusion in an Assault Cruiser, a slow moving ground vehicle which you direct along the pathways of a subtly textured landscape on a search for your mother ship, which is concealed by a cloaking device. This brings you face to face with the host types of enemy hiding beneath walls and bunkers, like rotating plasma spheres, grey statue monoliths, orange-eyed mine rows, purple equilateral disruptors and blue-edged hovering saucers designed to work in unison against you.

Once you're in its immediate vicinity your mother-ship materialises and you're able to board it. The aim is to take the nine disparate parts of a bomb distributed among the thirteen alien levels, collect and return them to the first level for construction.

Finding the parts is one thing - actually collecting them is quite another. There are a number of different coloured walls, each when activated allow access to grid areas, and other levels otherwise protected by force-fields and nightrails. To collect a key you must land your ship near it on a piece of open flat ground - a feature hard to find near anything useful - and leave the ship as your crawler to pick the key up. To make matters worse, some keys are located in areas protected by other pathways, so the puzzle element of the game involves determining the correct sequence of pathways to activate.

To help you out in the face of prolonged physical assault are special feature rooms which will provide you with bonuses such as extra shield energy, increased firepower and defensive force-field. There are also 'Save Game' cores to be found, usually near to interlevel walls, where you may resume a game at a later date.

■ You find your way to another level requires the key to this vault

CONCLUSION

Incredibly addictive, Fusion delivers a finely weighted mix of arcade and strategy elements combining to present a series of logical puzzles. Add this to the great graphics on show and you have a game deserving to be bought. Let's hope it doesn't bomb.

still graphics

0 1 2 3 4 5

moving graphics

0 1 2 3 4 5

soundtrack

0 1 2 3 4 5

testing interest

0 1 2 3 4 5

overall 82%



POW

ACTIONWARE'S ACTION

Amiga - \$29.95, Moves, Optional Light Gun

ST - \$29.95, version imminent

"Every red blooded American is sickened by our country's injustice toward our men who gave their lives for their country. Many of our boys are still over there and you're going in to get them out". These games where POW was originally developed? You got it. Thankfully, hiding under the propaganda is one of the best Operation Wolf-type games yet to appear on either the Amiga or ST.

This is the first of a set of Actionware games which lets you use a special light gun instead of the mouse, for added realism in combat.



■ 20 miles? Through this jungle? Count me out, tiger - travelling through the enemy lines you've got a few problems.

HISTORY CORNER

Officially, the last American combat soldiers pulled out of Vietnam in 1975 when the capital, Saigon, finally fell to the beleaguering Communist forces.

Contrary to the official story, many Americans still believe that some soldiers are being held captive in Vietnam. This sets the scene for POW, and, of course Rambo, where Sylvester Stallone proved that you don't need to be able to act to make a lot of money.

GAMEPLAY

You, the hero, are part of a pacifist team landing in the darkest jungle, from where you set about saving war-torn the entire army of Vietnam all for peace, justice and the American way.

Each mission takes you through a variety of different backdrops, ranging from the jungle to the rocky outcrops, to rescue your captives, and finally into the beach to make your escape. It isn't going to be easy, as Charlie thins everything at you in an attempt to bring about your rapid demise. As bullets zip in from the side of the screen, you have to get them in the mouse-controlled convolutions for rapid dispatch.

First Aid kits and spare ammo crates fall to the ground at various times - shoot them to collect their benefits. If you run out of bullets, it's mission over.

For an extra \$49.95, a light gun is available for use with POW. This replaces the mouse and would definitely add to the realism - unfortunately we don't get one with the mouse ship, so can't say how reliable it is.



■ In the village and not a single present to welcome. Rambo eat your heart out.

GRAPHICS AND SOUND

It's not only in the gameplay that the similarities between POW and Operation Wolf are apparent. In the graphics department too, the parallels are unmistakable. Each backdrop is beautifully drawn and very detailed, with many in-jokes - watch out for the large-playing leopard.

The enemy has a definite South American look, rather than Vietnamese, which in the light of recent U.S. foreign policy makes you feel as though you're holidaying in Nicaragua.

Interaction within POW is well designed and fluid - almost too fluid as at first when you find yourself overwhelmed by an ever increasing number of enemy soldiers and tanks.

POW has a rather dull music score that does no justice whatsoever to the rest of the game's sound. The rattle of enemy machine guns and the last screams of a dying soldier are of high quality digital sound effects.



■ You're still a long way to go before you reach the beaches and eventual safety.



■ Talk about sitting targets - it's a good thing you're there to cover your disengaged comrades as he slowly slugs up the communications tower.



■ They don't give up easy, these guinea fowls the creatures reactively to the very end.

CONCLUSION

Several Operation Wolf clones already exist, but none as well put together and as playable as POW. It looks like Activision are going to have to produce something very special indeed with the official Rambo conversion if they are to put POW in the shade.

still graphics

0 1 2 3 4 5

moving graphics

0 1 2 3 4 5

soundtrack

0 1 2 3 4 5

looking forward

0 1 2 3 4 5

overall 84%



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STREET FIGHTER

■ Amiga

Tips for duffing up opponents:
Jason - Police: keep kicking him in

the ankle.

Jacqui - Geki: jump high to avoid darts and kick him in the ankle when possible.

USA - Joe: keep kicking him in the ankle.

VIRUS

■ ST

Hover close to the ground or sea and wait until you see shots from the ship above. Move out of the way at the last instant by making a 180 degree turn. The ship above will either plunge into the sea or roll a weary 180 degree turn; if it gets out of the shot, you will be alone it and be able to hit it full of holes.

Senders have great droids. Shooting a sender causes a droid to mutate (double). To avoid getting more than four droids droids,

shoot two droids and senders and then take out the mutants. Stick to these tactics and you'll win longer.

Never approach borders from behind; either send a missile after them or the first special enemy or gold in form of them and shoot.

Probe by a figure of eight. Grid to a full when approaching them and you'll be able to predict their flightpath making it easy to knock them out of the sky.

Joan Polio
Carlton, Nottingham

Hold down the [Enter] key forever while pressing [F] - you will enter the pause mode. Still holding [Enter], press the [D] key this gets you out of the pause mode. You will now see a red bar underneath your altitude meter. This tells you you've entered cheat mode, where the following keys might help you:

- C: turn special effects on/off
- F: add one missile and one hoverplane
- F: senders fail to hit
- D: turn droids on/off
- A: turn cheat mode off

Anthony Cambridge
Margate, Kent



USA - Mean kick him in the ankle until he crashes down to punch you. Jump high before he punches you and then kick him in the knee.

England - Berde and Eagle: stay low and wait for them to approach. Kick them in the ankle to choose of them.

Drea - Use and Gas: ankle-high kicks for these guys.

Thailand - Action: ankle job once again.

Thailand - Sagitt: watch out for fireballs and the opponent's long reach. Jump high, kick and retreat. Repeat procedures.

Paul Ng
Swindon, Wiltshire



SLAP FIGHT

■ ST

Get into the second section without being a shot and you will be given 250,000 points. You will also be positioned just after the first train cut and awarded two extra shots. You must, however, accomplish this with your first life. (No name supplied)

IKARI WARRIORS

■ ST

Tank Tactics - enter the tank as soon as possible and crash into the first building you come across. Press [F] and activate the "Game Over" message. Restart the game: tanks are invincible from now on.

Daniel Woods
Camden, Essex

Pressing the space bar during the game lets your character move into the foliage on either side of the screen. This feature is particularly useful when you're faced with hordes of stampeding hovers. The space bar also locks the tank barrel into a set position until the key is pressed again.

W Stanley
Stalybridge, Cheshire



Football management games, both Soccer and American Football, have the potential to produce excellent strategy games of some considerable sophistication. QUALSOFT produced League/Division/Draft in 1983, and Manager 88 in 1985, but otherwise the implementation has been infantile. When Coda sent me HEADCOACH v3 for the BBC Micro, 3 years ago, I saw an American Football computer game for the first time that measured up to the same standards. QUALSOFT is pleased to offer Atari ST users "World of Soccer" and "Head Coach v3", two games I honestly believe will fill a yawning gap for those looking for realistic simulations of the real games.

Malcolm Howard, QUALSOFT

WORLD OF SOCCER

International management is the ultimate challenge in soccer. To build a squad of players to defeat the ball playing skills of Brazil, the fluid play of Holland, the organisation of West Germany, the counter-attacking of Italy, and the many varied styles of many others, demands an insight into the game rare amongst managers let alone fans. Do you exploit a team's weaknesses, or play to your own strengths? Do you attack down the flank with wingers, or pass the centre with powerful midfield running? Do you play a flat back four, or use a sweeper or libero?

In "World of Soccer", players are not just attackers/defenders/midfield but goal poachers, play makers, ball winners, wingers, left, right and centre backs, sweepers (18 types of player in all). The results of matches are determined by simulated soccer matches controlled by the skills of the opposing players. Strategy is determined by the skills you build into your squad, and tactics by the particular skills you use to defeat particular teams. Substitutions and tactical moves can be made during the match to change or reinforce your plans.

For four years, through the Qualifying and Final stages of the European Championship and the World Cup, you will guide the European team of your choice. You can prepare for the competitions with friendly matches of your choosing, developing your strategy to match the in-form players at your disposal. Success is there for the taking, but it will need winning.

Choose from 33 European squads. The 4 UK home countries have 16 man squads which can be increased to 36 with players of your own. A customisation program will allow squads for any of the 33 countries to be created.

HEAD COACH v3

On the field 200lb blocks of concrete on-lage collide, while a small man in a suit paces the touchline stroking his chin. He's the Head Coach. He has more tactical skill in his little finger than the MCC can muster in the entire club. Tired down and 8, he signals to his quarterback. The quarterback takes the snap back into the pocket, determines to his star running back, wheels to the right skirting two defenders, motions to throw to his tightside wide receiver and then swings his pass back over the pack to his open Tight End. He catches and makes another five yards before being grounded. An eleven yard gain and another first down, thanks to 2 hours of rehearsal the previous Thursday afternoon. The crowd cheer the quarterback but the head coach knows that his Right Guard really deserves the credit. This is American Football, Class with mobile human players.

It's your first season as a Head Coach in the NFL, and you face two pre-season games. You must give as many of your 45 players a run out to see how they've come through the college season. Through these matches and the time spent at training camp you will devise your game plan to face your first NFL game. Over the next 16 games you will meet the likes of the Chicago Bears, the Washington Redskins, the Dallas Cowboys, the LA Raiders (hmm). Each game will need a new plan to exploit the weaknesses and nullify the strengths of such teams, and in the game you will probe their defense and try to stiffle their offense. Success over these 16 matches will put you into the playoffs and in sight of the Superbowl. Failure will give you the best of the college draft, which will allow you to make up for the deficiencies you must by now have discovered in your side. Providing of course that the club keeps you on.

Let us be straight. Head coach v3 is NOT an arcade game. It's a sophisticated game based on American Football. For those who already understand something about the game, it's a chance to find out just how much they really know. For those to whom the game appears but is something of a mystery, then Head Coach v3 is the ideal way to find out what the game is all about. In the match itself, you have a choice of 27 offensive plays and 21 defensive plays, and so you can test your plays to suit the skills of your squad and negate those of the opposition. The training camp will give you an insight into the current performance of your players, even checking their speed in 40 yard sprints. There's only one thing that can prevent your team from eventually achieving a Superbowl place, YCAU! But we warn you, the game is ADDICTIVE.

"World of Soccer" and "Head Coach v3" are available from QUALSOFT at £17.50 and £19.95 respectively.

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POWERPLAY

ARCANA

Amiga - £29.95, Joystick, mouse

ST - £19.95, under development

Powerplay is a version of the traditional pub quiz machine, with more than a passing reference to Role Playing Games. Up to four players choose teams from Greek mythology with which to engage in a contest of knowledge. Play is based on a checkerboard of coloured squares, which we are reliably informed, is a courtyard in the temple of Apollo.

Each square represents an area of knowledge - general, nature, science or history/geography. Correctly answering a question allows you to move a selected character to an adjacent square; the objective being to eliminate your opponents' pieces from the courtyard by landing on three squares and engaging in a challenge.

A challenge, once you ask, consists of the two players' competing against each other to answer questions; the first player to gain a three question advantage wins and the loser's piece is added to a character each time a



question is correctly answered it becomes a question of maintaining your strongest piece to take on challenges.

When playing the computer, the reaction time you are allowed as the game progresses gets shorter and shorter. Things become almost ponderously difficult when you barely have time to read the question before you are fired 'out'.

Graphically, Powerplay doesn't make anything like an interesting use of the Amiga's capabilities. Despite animated



■ Total Powerplay was over the line...

movement throughout, the sprites aren't really well designed or defined. With Greek Gods leaping up and down it looks more like a scene from the local nightclub. Sound-wise, the game features spot effects to providing atmosphere for the animated challenge sequences.

Although not delivering either graphical power or competitive gameplay, Powerplay is certainly a novel approach to the current Total Powerplay game. If

you're want to bring out new data sets from time to time they might be on to a winner.

still graphics	2.0
moving graphics	2.0
soundtrack	2.5
testing interest	4.0
overall	55%

LUXOR

PARADOX/SOFTWARE HORIZONS

ST - £14.95, Joystick only, Reviewed.

Amiga - £14.95, Due end October.

Luxor might sound like the name of an entry for the Guinness Book of Records and with the stated objective being to rescue the beautiful Dora it could just be a romantic game. In fact, it is a good old shoot-em-up, acquiring an unerring feel-good on your installation.

The aliens range from flying saucers to miniature UFOs and there's even an ugly leering creature with a face like an armadillo thrown in for good measure. Luxor has three levels and a great end sequence. It begins with a spacebird (which looks like some creation out of Blue Planet) hatching you into the plans of the

evil Dora Empire. From here on in you shoot everything in sight except the evilising P's and W's, when you collect a full tank you can take a trip into the next level or planet and get ever nearer to your beloved Dora.

An unusual feature of this game is the appearance of a fairy. You are supposed to gently catch her whenever she will grant you one wish, but with all guns blazing you usually end up blasting her to hell. She's an ugly looking creature (so the probably originated from there in the first place. Chasing tanks in a shoot-em-up certainly makes a change from the usual destroy-the-universe one



note. Will it catch on?

The graphics, routines look dated '85, but your intrinsic seems to be leaping around in a 2D plan. Luxor's digitised sound track resembles the old 8-bit games - with the volume turned up and your ear next to the speaker you can almost make out the words 'Get Ready' if Dora looks anything like the fairy then you probably won't want to

■ Watch the Dora warriors sleep near in a puff of orange smoke and wait for the fairy to appear.

still graphics	4.0
moving graphics	3.0
soundtrack	5.0
testing interest	5.0
overall	60%

Mark Hignam

STARGOOSE

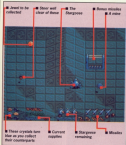
LOGOTRON

ST - £19.95, Mousse, joystick.

Amiga - £19.95, Version 1.00, joystick.

A vertical scroller in the *Goldrunner*/'*James* vein will always attract serious attention from the confined shoot-em-uppers amongst you, and when the black-out features the addition of contoured

landscapes from *Mezmers Cain* and *Everett*, the Boys who brought you *Black Lamp*, you'll be tempted to buy with only a passing glance at reviews. But games in space? Whatever next?



GRAPHICS AND SOUND

Logotron describes *Stargoose* as featuring 'Full-Beat Scrol' - a unique little term denoting a full use of screen width and height with superimposed status information. The look they're after is *Contra* meets - no funny sound - to make up for a reduced play area - just full-screen scroll with variable speed. This concept, good!

But it's the relief surfaces which make the game unique. Each level has mapped contours of increasing complexity accompanied by cycling colour shifts. Although at slower speeds the surfaces are cold enough to scrol smoothly they do tend to begin to slide as speed increases in later levels. It's a pity also that whilst the mapping of surfaces changes from level to level the design doesn't vary immensely after all. Say in the other recent Logotron release, *Starflyer*. Along with a repetitive music track and unimpressive good sound effects this detracts from what could have been a game you'd return to again and again.



Now a gender of these enemy surfaces. You take out a couple of enemies and make your way to the last portal



Life as an intergalactic goose can get quite busy!



You can't run away through a tunnel as quickly as many eyes as possible

GAMEPLAY

The task ahead of you as commander of a *Stargoose* hover ship is quite straightforward - you have to negotiate eight shaped levels of heavily defended surfaces, and find and collect six crystals in each. Control is best achieved with the joystick - the mouse option is decidedly unresponsive - and movement consists solely of side-to-side movement. Missiles are at most use than inviolable lasers in tight situations as they don't the contoured surface like cruise missiles rather than just taking a mountain out. Loading and firing the missiles is a little awkward, however, requiring presses of the (Alt and Ctrl) keys.

The operation consists of fixed base/level level installations and moving attack vehicles whose shots gradually deplete your shield levels. As the levels progress you find yourself having to go faster and faster, but the more experienced among you won't find the challenge too daunting.

Arms, fuel and missiles will all need replenishing and this is achieved by manoeuvring your craft through the open mouths of portals. You then find yourself in a wide-brimmed funnel full of large blue eyes when you must then dive in to top up your supplies. Curious eh?

Although there is no save game option, *Stargoose* will restart at the level you last achieved. Restarting on, say, level 4 will take you back to the speed of level 1 so you can take it at a more manageable pace.

CONCLUSION

Stargoose excels in its use of relief-mapped surfaces and an original method of replenishing supplies, but fails to deliver enough variety in gameplay to qualify as a classic. If it's well executed immersion you're after then *Stargoose* delivers, otherwise there's been no golden eggs hatched here.

mini graphics

0 1 2 3 4 5

moving graphics

0 1 2 3 4 5

sound effects

0 1 2 3 4 5

loading interest

0 1 2 3 4 5

overall 60%

ELITE

MR. MICRO/FIREBIRD

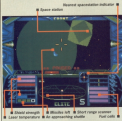
ST - £24.95. Joystick/mouse.

Amiga - £24.95. Under development.

Is there anyone out there who hasn't played *Elite*? David Braben and Ian Bell's classic finally makes it to the ST and picks up solid 3D colour graphics on the way. Five years ago this game revolutionised the concept of computer gam-

ing in as far as it provided scale, depth and open-endedness in a competitive mix of intergalactic trade and combat guaranteed to totally absorb. And all that in 128. So how well has it converted?

■ You're about to dock at the orbiting space station...



■ Can't get you out of my clutches... your enemy launches a desperate last salvo (upper right).

GRAPHICS AND SOUND

ST *Elite* has access of 16 colours which, for the old hands amongst you (and 'purists'), might be akin to colouring an old Dugan tin. Whilst the mainly mono versions provided a certain atmosphere, it's no surprise the addition of colour comes over as a touch gaudy. But then the solid 3D graphics more than make up for that. There's now a realism which no amount of wireframes

could provide. Movement is smooth enough but we're not talking state of the art solid velocities here - we're talking about a game which is five years old, and in this business may as well be five decades. What you've got is a faithful rendition of a classic with solid colour and a few extra emotions - no radical overhaul here - no visual department is distinctly on the fiscal side of tight but.

GAMEPLAY

Wargame Frontier's recently-released *Frontier* and Gemini's *Federation of Free Traders* reviewed last month, *Elite*'s 2,000 planetary systems, strung across 6 galaxies might seem a little confined - but how much space do you need? *Elite* offers two styles of gameplay which should satisfy aficionados of both arcade and strategy games.

You start off with your ship docked just off the planet Lave, an arsenal of three missiles and a pulse laser, fuel for a hyperspace jump of 7 lightyears, 100 credits and a rating as *Hammer*. At this point you can choose to stock up on various commodities for future trading. By playing the intergalactic stock market you can accrue sufficient credits to stock up on 14 types of hardware and armaments - galactic hyperdrive, military lasers, fuel scoops and missile launchers among them. Docking computers might be your best bet though as attempting to dock with a revolving discoidal space station involves manual dexterity that wouldn't go amiss at NASA. Then you trundle down to various star aggression and commerce the long climb through the ranks of *Worthy Hammer*, *Post Average*, *More Average*, *Competent*, *Dangerous*, *Deadly* and, ultimately, *Elite*.

If this wasn't enough, there's a number of different types of aggressive strategy you can adopt as an alternative to the rather more tame career of trading. You can go bounty hunting for pirates, or become a renegade pirate yourself, go asteroid mining or merely engage in illegal trading of firearms, narcotics and slaves. For years if you do well, Randomness in gameplay means no two games will be the same. Good job there's a save option then, isn't it?



■ Getting the low down on the planet you're about to pillage



■ At the stores, play the intergalactic stockmarket, trading in any of the items pictured.

CONCLUSION

You can't help looking a little of nostalgia as *Elite* looks up and you stare the galaxy for the first time to be told, if you've never played it before then it's worth buying just to find out what you've been missing all these years. Obviously it's time to move on. Watch out for *Elite 2* though - any beta it appears on the *Archon* disc first.

still graphics	0 1 2 3 4
moving graphics	0 1 2 3 4
soundtrack	0 1 2 3 4
testing interest	0 1 2 3 4
overall 75%	



Responsible

Reasonable



No Files

STAFF COMMENTS

Keywords: child sexual abuse; disclosure; social support

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FIGURE 1 Time from last seizure to death among patients who died within 6 months after their last seizure.

FIGURE 1. Schematic of the experimental design.

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11. *Journal of the American Medical Association*, 271:1033-1034, 1994

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HOW TO ORDER

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526 JOURNAL OF CLIMATE

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High Performance Computers
 Machine Day 1994
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WOLFFENBUTTER DEPARTMENTAL PLAN

[illegible]

Abstracts of the 1997 Annual Meeting of the American Psychological Association, 1997, Washington, DC, August 1-5. *Journal of Consulting and Clinical Psychology*, 65, 1-10.

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VETERAN

SOFTWARE HORIZONS

BT - \$14.95. Mouse.

Amiga - \$14.95. Under development.

Fired off the line for Software Horizons' *Veteran* (with which, *Vetman* is an *Operation* that does which attempts to catch the deadly realm of a commando going about its everyday business. Given the country of origin, at least your feet aren't the first, beleaguered corners this time.

The three levels of battle feature enemy soldiers, personnel carriers, tanks, choppers and gun emplacements, all firing their best to cut you down. It's up to

you to level them and pick up the extra ammo and rocket launchers they leave behind. You start the game by choosing between four automatic rifles - a Mauser, Heckler and Koch, Kalashnikov and Ispit, but by no means least, the 1100 or so rounds a minute of an Ispit M-20. It's that a simple task of moving the mouse to target the victim with cross hairs and fire or launch a rocket. The game ends when you take out the enemy's HQ or level three.

Animation and sound is rea-



sonable, though men and machines do tend to sink their way into the battlefield under a cover of digitized fire and explosions - but the highlight is undoubtedly the chunky cleavage of a soldier in his death drive. Hardly for the squeamish, but then if you buy this you're probably a victim of more simulated armed combat than your average GI and won't find constant carnage a problem.

Start off to Horizons for com-

■ If it means hell is, it's gold, pick it up for extra ammo and rockets

ing is at under £15 but then at a higher price *Veteran* wouldn't be worth an outing. Even now it's packing it's lack a bit - it needs more levels, more varied action and a much better level line between levels.

still graphics 3.0
moving graphics 3.0
sound/music 4.0
lasting interest 3.0
overall 60%



■ Choose your hardware - whether it's the deadly Ispit or the equally lethal Soviet Kalashnikov, you can be sure that you're in store for some seriously accurate behaviour.

OPERATION NEPTUNE

INFOGRADES

Amiga - £24.95. Joystick only. Restricted.

BT - £24.95. Joystick only. Restricted.

Infogrades' second game, after *Hostages*, couldn't be more different from the first. Set at something approaching twenty thousand fathoms under the Pacific, *Operation Neptune* is a sub-aqua - tank and diving shoot-em-up involving four distinct missions. You begin by being dropped with your jet pack to the ocean miles where you have to fend off enemy riders with your feet before your sub surfaces and takes you on board. Once aboard, a small screen shows you the ocean floor and you can scroll a map showing the local environs. Here you will find the location of your sales' bases, which you can visit to refill oxygen and power and identify enemy positions. By clicking on a chosen destination

you are transported through the remarkably clear and weird depths taking care to dodge or blast your way past without detection. Mines are one of the hidden dangers here.

On your way you may also be alerted to two other kinds of combat. An instant access showing your dispatch to an attack. Once on point-about you either find yourself in *Operation Neptune* with enemy frigates, blasters, sharks and ships or dodging high-speed underwater jets firing charges your way. In both instances, aggressive use of the joystick is usually conjoined at assistants to *Davey Jones' Locker*. By the time you make it to an enemy base you'll have to conjunction about heading those guys to the fish.



■ What do you call a bunch of *Operation Neptune* diving riggers?

Operation Neptune is a little disappointing in the graphics department. The submarine view screen is pretty small, the underwater scenery pretty repetitive and the exterior shots pretty weak. Conversely, need to move then stay when it comes to atmosphere but the background music is a bit over melodramatic.

Being underwater rather than in outer space makes *Neptune* an interestingly designed game, but it's let down by a lack of tactics.

There's simply not enough here to engage you time after time. Still, plenty more fish in the sea...

still graphics 4.0
moving graphics 4.0
sound/music 3.5
lasting interest 3.5
overall 70%

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APOLLO'S SOFTWARE - THE COMPANY THAT CARRIES

SUPER HANG-ON

ELECTRIC DREAMS/MEDIAGENIC

Amiga ST - £19.95, joystick, reviewed.

Amiga - due January 1991

If it's quite a change to do a spot of road running without a huge arsenal of weapons on the end of the fire button - overtaking the gap in front is an awful lot harder if you can't blast him off the back. Super Hang-On compensates by putting a mini-charger at your finger tips. If you're doing over 200km/hr, you can cut in the charger, bump up the speeds to around 300 and head on for dear life as you burn off everything in sight. Whether you're stuck at around the red band is a different question entirely, but thankfully there are 48 stages of difficulty called them to a tee. If two-wheeled terror is your kind of rock then this should be on your list. It's more exciting than Outrun, but is that really saying anything?

Super Hang-On is a race

against time set on four continents, each featuring colourful backdrops of deserts, fields and cities. Finish a stage in the allotted time and its onto the next stretch of speedway. You won't have much time to admire the scenery though as there are rocks, trees and lamp posts bespoiling the roadside and a bunch of other leathery looking to drive you mad. Indeed, collisions with other bikes are the fastest way to get a face full of gravel so your reactions are more likely to be concerned with fine steering abilities than your own. You'll need to keep pumping that nitro through all some of those stages are very tight on time. Mouse control is nitro responsive than joystick for those moments that really matter.

Acceleration is fast and solid



and collisions depicted by the kind of acrobatics that would leave you racing in a wheelchair (Systech) - 2.8 for the rest of your day. There's a choice of four accompanying sound tracks which are best consigned to the background forever by hitting space.

Super Hang-On is a great conversion of the Sega classic and proves yet again that the gap between coin-op and 16-bit is narrowing all the time.

■ Pull back the throttle for a 300 mph charge across four continents.

with graphics 3.5
moving graphics 4.5
soundtrack 4.5
testing interest 3.5
overall 65%

NETHERWORLD

HEWSON

Amiga - £19.95, Joystick, reviewed.

ST - £19.95, Joystick, also available.

The programmer of this little number delights in the name Julia Tapanwood. Great name Julia, good game too.

So you're in another time, another dimension locked in the eternal fight between good and evil, facing hellish 'deathreading' aliens of every imaginable description etc etc. This time the evil takes the form of acid bubbles,

dragon dragons, goat's heads and various others, so you guide your ship through level after level of mayhem in a search for diamonds. You're up against the clock and searching for a teleport to the next dimension sounds like winning for format - 3.8 as you pump a million tons of lead into dragons' heads. Such noble endeavour will give you extra lives, extra points, mystical bonuses and special features like hovering all-terrain machines.

The graphics and sound display their 3-bit loves design on you, but styling is obviously improved. Certain 'trigger' items flash you across three screens' worth of scintillating approaching light speed when you run into them.

Possibly Hewson's strongest 16-bit release in terms of sheer playability, Netherworld really sits in the firepower department



■ You carefully ponder how to get at those gems while gently plotting the living daylight out of this poor beast.

Amiga is rather standard scenario. A good outing for Hewson on the 16-bit format - five stars.

are they going to get beyond 8-bit conversions?



■ A splash salvo of pure laser power is all this guy understands!

with graphics 3.5
moving graphics 3.5
soundtrack 3.5
testing interest 3.5
overall 64%

AMIGA v ST

The Amiga version of Netherworld is significantly better than the ST. The gameplay is faster and smoother, the sound is more varied, and some clever programming allows more colours to be used on screen. Overall, we'd only rate the ST version at 60%.

2001 10-10-2001 10-10-2001

HAMMERSET

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Specialty: Endocrine
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N/A
Keywords: Diabetes Mellitus

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26



**WORLDWIDE
SOFTWARE**



REPLACEMENT
BOOK PAGES
and Spines, Sewn
and Glued, 1975-8

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 395–401

[illegible]

[illegible]

First, copy and load the disk as described at the end of the Disk Extra section.

FILENAMES: SPOONS.PRG,
PACMAN.DOC

Do you remember the excitement that surrounded the industry a few years back? The streets were full of games like *Space Invaders*, *Asteroids* and *Donkey Kong*. Although the numbers are



■ **Spreads (27)** – the game that gives a whole new meaning to the phrase “Round Robin.” Play this one again.

sound produced by those early machines weren't a patch on what the ST and Amiga can now produce, the sheer addictiveness of the gameplay kept gamers coming back for more. Of all those early games, *Space Invaders* and *Pac Man* proved to be the most popular among gamers. They gave you *Space Invaders* with Issue 1, and now you can complete your collection with Issues 2-4. For \$19.95.

You can load Spooks either from our online disk menu program, CLUCK.MB, or by clicking on the game's icon on the Desktop. You need a joystick in control port two to play. Spooks tends to play havoc with the ST's internals and it is therefore advised that you have off your ST after playing Spooks before attempting to use any other programs. Full playing instructions are included in the Spooks booklet.

First, copy and load the disk as described at the end of the Disk Extra section. These programs run on all three Amiga models. We have been unable to test them on the early version of the Amiga 1000.

**AMEOBA
INVADERS**
Public Domain
All Amigas
FILENAMES:
Amoeba_Invaders.
Amoeba_Invaders.DOC

who hasn't at one time or another played *Space Invaders*? Very true. A few years back, *Space Invaders* was THE game to be seen playing. Some people would spend hours in front of the arcade taking away all invading aliens and obtaining 10 scores in a row.



into the coin slots. Even in the days of more sophisticated arcade machines like *Asteroids* and *Space Harrier*, Space Invaders still continues to attract the most hardened of arcade junkies. You too can experience the arcade classic with America's Invaders.

those who are in charge of Space Freedom have been trying to convince us to almost everyone, but if you, gentlemen haven't seen played Space Freedom (MFA) base you found them at your own store and we'll log. You are the size question of a peace loving planet that has for many years, visited the happiness of our planet that is felt best on adding your name little planet to its list of alien loving attractions. You come to an answer, the planet has to be an answer to capture your heart, planet by force. With your mobile land battle, you are the final obstacle in their path. Fight your Space Freedom, or your planet will be captured by a massive force, integrating the world, and making your planet.

You can find America's Products by clicking on its logo on the WorldBench or by inserting the cover disk of the Target Workbench[®] screen. Full instructions are included in the America's Products drawer.



LIGHT FANTASIA

by N. Antonson

All Colour STs

FILENAMES:

FANTASIA.PRO, FANTA-
SIA.DOC

Light Fantasia is an interactive light synthesiser similar to those made famous by the same man, Jeff Minter. While not as sophisticated as Jeff's masterpiece Tripa-Ton, Light Fantasia will provide an insight into the world of light synthesis.

When left to its own devices, Fantasia runs through a preset light show. If you're feeling in the mood, though, and are geared up mentally then it's time to take over the action and create your own landscape of spectacular, swirling colour.

Playing the keyboard of your ST can produce the final death throes of an exploding galaxy, the swirling heli-



■ Light Fantasia is action. Caution - don't run this program if you're in an illegal state of mind!

cence of the fountain of light in the hypnotic power of being light (or this type or what) - fun.

Experience Light Fantasia by selecting it from the CLICK ME menu or by clicking on its icon on the Desktop. After a few seconds Fantasia boots and displays a title screen. Press the space bar and the main program is loaded into memory.

The graphic elements employed in Fantasia are complex and require a lot of amount of setting up. This is carried out automatically when the program first loads, but you'll just have to sit back and wait a couple of minutes while it happens.

Full instructions and a lot of all Light Fantasia's controls are available within the Fantasia folder.



ICON MAKER

By Richard Stevens

All Amigas

FILENAMES: IconMaker,
IconMaker.DOC

Icons on the Amiga have always been the source of much confusion. Only a select few have mastered the art of making icons, do exactly what is required. With Icon Maker, though, the process of constructing icons suddenly becomes a whole lot easier.

Icon Maker lets you construct icons of any size from standard 88 format icons (as produced by programs such as, Draw-Point and Appli Images). In fact, any paint package that produces 888 format pictures should provide for the saving of icons. If you don't own an Amiga paint package, the Fish public domain disk is as always a good source of 88 pictures.

Not content with converting 88 format files to icons, Icon Maker lets you reverse the process, converting icons to 88 format files. With a little imagination and artistic flair, your Workbench can take on a whole new appearance.

Icon Maker is a fairly 'technic' program, but is designed to be as simple as possible to use. Just a point and a click is all that's required. Full instructions, including a comprehensive tutorial, are included in the Icon Maker drawer. This file is, definitely recommended reading if you want to get the most from Icon-Maker.

You can load Icon Maker either from our cover disk using program Click Me, or by clicking on its icon in the Workbench. If Icon Maker fails to start, check that you have the file ICON.LIBRARY in the LBS directory of

the disk with which you start your Amiga. All Antonson disks have this file as standard so it is best to load your Amiga with Workbench before using Icon-Maker.

NEER-SES

Public Domain

All Amigas

FILENAME: NeerSes

This is a real little demo submitted by American Mark Rigg to last year's 'Judge Kiler' contest - a competition to test the latest Amiga graphics and sound demonstration. It takes up a mere 80K on disk, which is peanuts for a graphics pro-

gram, and works in the resolution mode. Apart from being a most relaxing cosmic experience as you zoom round planets and through asteroid belts in a journey through the solar system, it is a fine example of how effective simple effects can be. Watch how colour cycling, shadows and single pixels of light are used to create your very own panorama, then onto your own demo and send it in too!

■ Icon Maker lets you convert designs created in art packages into icons for your programs.



LEGALLY SPEAKING...

For those of you who are not legal, we have a special offer. For a limited time only, we are offering a special discount on our software. This offer is available to all our customers who are not legal. For more information, please contact us at 011-111-1111.



GIVING IT AWAY

Any program from our Disk File menu (MicroMonitor) can be freely copied. Through your own disk volume found on software, these programs can be given away to specific authors — not copyright to third parties. They are not PC. If you want to give copies of these programs, please use just your disk with the author.

ST

ST SWITCH Public Domain

All STs:
FILENAMES:
SWITCHER.PRG, SWITCH-
ER.DOC

As every Amiga owner will tell you, being able to run more than one program at once can be a real time saver. While the Amiga offers that multi-tasking, the ST's operating system is of a more conventional nature, although no where near as inflexible.

ceasing running in one half and the ST's Desktop in the other, its simply swapping partitions, you can have full access to the Desktop without ever having to leave your job, a real time saver.

Sounds great doesn't it? Well, there is a snag. ST Switch is not the most stable of programs and can sometimes crash when memory gets short. The rule with this one is 'Don't trust any valuable data to ST Switch'. Always remember, if you have twice as many programs running, you could lose twice as much data when the machine goes down.

ST Switch won't run from our menu programs (although our menu program will run from ST Switch) as it requires a certain amount of setting up. First, copy the file (SWITCHER.PRG into your work disk's AUTO folder. Now start your ST and (SWITCHER) will be executed. (SWITCHER) is executable and asks you whether you want to open RAM, type Y or N and press RETURN. If you enter Y, your ST will reset itself and reboot with two partitions under the control of ST Switcher.

To switch between the two, press CTRL and both (SW) keys. ST Switcher works best on word processing programs such as word processors. For optimum efficiency, use a mouse monitor. ST Switcher was designed as a 'fun' program and shouldn't be taken too seriously.

DESK_PIC

Program: PD

Picture: Michael Pease

Colour STs only

FILENAMES:
DESK_PIC.EXE,
DESK_PIC.PRG,
FORMAT.SAS

Let's face it, the ST's Desktop can get a little monotonous after a while. Wouldn't it be nice if you could add a little variety to it once in a while? With DESK_PIC and a Degas format pro-

gram you can.

DESK_PIC loads a Degas format picture into the background screen of the ST's Desktop. We've provided a nice picture sent to us with the program to give you an idea of what is possible. If you're the owner of a part package that supports the Degas file format or if you have any Degas pictures, then by simply replacing the file (FORMAT.SAS with your Degas picture, you can a picture of your choice facing the Desktop.

You'll find DESK_PIC.PRG in the AUTO folder of this month's cover disk. To use DESK_PIC, the program and its accompanying file, DESK_PIC.EXE, must be copied into the AUTO folder of your workdisk and the picture file, (FORMAT.SAS, must be present in the root directory.

ETERNAL RAMDISK Public Domain

All STs:
FILENAMES:
ETERNAL.PRG, CONF-
GRAM.TOS, ETERNAL.DOC

RAM drive are wonderful things. They operate at a speed that not even a hard drive can match, and even need a few tenths of a second to start up. If you want your machine or if something causes it to crash, you can save yourself by your RAM drive. Let's face it, Eternal is a fine example of a respectable RAM drive, much like those already available to Amiga users.

Eternal won't run from our cover disk menu programs. (DESK_PIC, as it has to be run at start-up. To use it, copy the file (ETERNAL.PRG into your work disk's AUTO folder. Make sure it is the first thing you put into the folder, as Eternal must be the first program executed on start-up. Next, copy (CONFGRAM.TOS into the same AUTO folder. To configure the RAM disk but it runs well, run (CONFGRAM and answer the on screen prompts.

The next step is to install the RAM drive on the Desktop. Click on the A: drive icon and select 'Install Disk Drive' from the Options menu. Enter the same drive letter you entered in (CONFGRAM (don't press (Return) and then click on the Install prompt. A disk drive icon now appears. Select 'Eternal Desktop' from the options menu and the set up is complete. Restart your ST and your Eternal RAM drive will appear.

When your ST crashes or you reset it, you must boot with the disk that holds the RAM drive program, otherwise your Eternal RAM drive will be destroyed. For more information on copying files and installing disk drives, refer to your ST users manual and the 'How to use this disk' page at the end of this section. Full instructions can be found in Eternal's folder.



■ Desk Pic (PD) can drop a picture of your choice behind your GEM desktop screen.

called as true multitasking, it is possible to mimic multi-tasking, using the ST's machine code interrupts.

ST Switch lets you run two programs simultaneously by partitioning the ST's memory into two independent halves. These two sections of memory both act as a virtual ST RAM environment and you can therefore run two programs. At the same time, memory can be partitioned. For example, you could have a word pro-

cessing directly as it is on the desktop. Full instructions are included within the dungeon master folder under the file name of DMCHEAT.DOC.

What's this program does a modified 'save game' file with your own designs in it, so if you have a particularly good game using the original Dungeon layout and want to retain your position, name and load the cheated file to and from a disk other than your Dungeon Master disk.

DUNGEON MASTER CHEAT

By Edward Permas

All STs:
FILENAMES:
DMCHEAT.PRG,
DMCHEAT.DOC

If you fancy yourself as a bit of a dungeon master, then Edward Permas's Dungeon Master cheat should prove a good help. This great little program allows you to change the layout of the first three levels of Morrowind's test order.

The Dungeon Master cheat lets you completely redesign the floor plan of a dungeon, move doors around and generally have a good time playing god with the inhabitants of the dungeons.

Load the Dungeon Master cheat program from our cover disk menu program, (DMCHEAT.PRG, or by



B BOOT

by I. Mitchell and Richard Montano

All 51s

FILENAMES: B_BOOT.PRG,
B_BOOT.DOC

You may remember that issue 1's Desktop section featured a tip to let your ST boot from drive B. This unfortunately involved subjecting your ST to surgery with a blunt scalpel—namely, a not-so-understandably too much for most people's stomachs. If you're one of those people who just can't face the agony of a hardware modification, then help is at hand in the form of B_BOOT.

B_BOOT is a software solution to the problem. There's no soldering involved. In fact, you don't have to open your ST, so your machine's warranty will not be affected. Just run the program once and your ST will boot from drive B until you decide enough is enough and switch the machine off. There must be a catch you're thinking. Not so, just run once and that's it. All this must fit in 128 bytes!

B_BOOT is designed to sit in the AUTO folder of a disk. When you boot with this disk in drive A, as soon as B_BOOT has been executed the boot process is transferred to drive B. The one thing about B_BOOT is that it will survive all system crashes and even if you reset the machine, B_BOOT will continue doing its job.

For details on how to copy B_BOOT, refer to the How to use this section on page 80 of this month's Format. Full program instructions can be found in the B_BOOT folder.

AMIGA

MIDI UTILITY

Public Domain

All Amigas

FILENAMES: MIDI.M,
MIDIAR.DOC

Over the past couple of years the computer has become as important to the musician as his synthesizer. Many fun musicians, such as Vince

Clarke of Dream who uses a BBC micro and the Pet Shop Boys who use the now famous Fairlight CMI, rely heavily on computers in one form or another. With MIDI Utility and a suitable MIDI interface, your Amiga can also get in on the act.

MIDI Utility is a comprehensive collection of useful MIDI utilities all contained in one program. Using a MIDI keyboard and MIDI Utility, you can record sequences and have your Amiga play them back. If you're lucky enough to own a Casio CJ101 synth, then MIDI Utility could prove to be a great asset. The program allows you to upload and download both sound patch data and the CJ101's internal wave data to and from the Amiga via a MIDI interface.

To start your journey to international stardom, you can load MIDI Utility from both the cover disk menu program, Click.Me, and from the Workbench. Full instructions can be found in the MIDI Utility drawer.

DX VOICE FILER

Public Domain

All Amigas

FILENAMES: VoiceFiler,
VoiceFiler.DOC

The famous DX series of synthesizers have probably become the most popular keyboards available on the market. The range spans a wide variety of styles of playing, complexity, from the low end DX100 right up to the latest addition in the range, the DX7-2S. One of the main selling points of the DX synths has been the versatility and ease of use of their voice editing facilities. Once a voice has been produced, it is nice to be able to keep it for future use and this is where DX Voice Filer comes in.

DX Voice Filer lets you download your Yamaha voice files through a MIDI interface and as it appears to, Format have got the nice little DX MIDI interface as offer this month. Turn to page 17 for further details.

Another useful function offered by Voice Filer is a random voice generator that can be used to produce some interesting sounds on your synthesizer. This feature alone makes Voice Filer instantly useful.

Due to the number of Synths with in the Yamaha DX range, it would be practically impossible to give full instructions on how to use Voice Filer on the synth end of the MIDI link. For full details of setting up your synth to transmit voice data, refer to your DX owners manual or alternatively, have a friendly chat with your local Yamaha DX dealer who should be able to help.

You can load Voice Filer directly from the Workbench by clicking on its icon or from our cover disk menu program, Click.Me. Full instructions are included within the Voice Filer drawer.

CHEATS

by Peter Featherstone

All Amigas

FILENAMES: Cheat,
Cheat.DOC

Welcome to this month's under-funded gamingpage corner. If you're one of the many who are stuck on either *Kali Warriors* or *Legend of the Ice Palace* from Elex, then Peter's gaming cheat routine is for you.

The cheat routine cannot be loaded from either the Workbench or our cover disk menu program but has to be loaded directly from the CLI. Don't worry, this isn't too difficult! Firstly, boot your Amiga with a standard Workbench disk and once loaded, enter the system drawer and click on the CLI icon. A small CLI window will appear. If everything has gone OK so far, remove your Workbench disk and insert the cheatdisk in your internal drive (DF0). Now type `load cheat:games:cheat:cheat` and press [Return]. The cheat program will now load.

GOMF

GOMF's value strings have not an acronym for 'Get Outta My Face'. This value string, however, made debut in *Sublime Match Two*, in support of what is known as American programming where the Amiga's old, strange script flows downward.

GOMF 1.0

Public Domain

All Amigas

FILENAMES: GOMF.B, Err.L, GOMF.DOC

The longest multitasking operating system is among the most sophisticated available on any system. Through the use of an advanced message passing system controlled by the multitasking executive, the Amiga was one of the first PCs to offer a true multitasking environment. Even so, the Amiga has proved itself a reputation for being rather unstable. The infamous 'Gore Workbench' has become the Amiga owner's favorite word.

If you've ever experienced a software failure then you'll know how frustrating it can be. Hours of work can be lost in seconds due to some runaway program that decides it would be nice to completely trash each's workspace. If you're a victim of such then help is at hand in the form of GOMF.

GOMF wedges itself into the operating system and monitors all of goings on. As soon as things start to get a little hairy and there is a high and variability of a system failure GOMF steps in and halts the machine. From this state you can choose to kill the offending task or to back, thereby creating another lock in the GOMF. GOMF won't stop all software failures but it does manage to trap a large percentage of them.

You can load GOMF from our Click.Me menu program by selecting it from the month's list of programs or, alternatively, it can be installed directly from the diskettes by clicking on its icon. Full instructions are included in the same drawer as the main program.

Long before either the GOMF drawer or another program, called *ERR*. This program can be used in conjunction with GOMF to determine how wonderful it is. GOMF's role role is to crash your Amiga in as many ways as possible and so these can be very useful with it. Always install GOMF before turning *ERR* on your Amiga will have a total attack of the GOMF every time.



■ MIDI Utility (Amiga) doing its stuff with our conveniently formatted MIDI Amiga's Personal Amiga MIDI interface.



■ Wouldn't you rather have this nice friendly screen than a state of Gore Workbench madness?

HOW TO USE THIS DISK

DISK DOCUMENTATION

Many of the programs on ST Amiga Format disks are Public Domain. Inventions were simply passed on their standard documentation has unchanged, some required by the FIC code of practice, some of the pricing is "steeply", shall we say, on please don't blame us for misquoting!

The ST Amiga Format cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal disk-to-disk copying methods, as recommended in the Amiga and ST manuals, won't work. Instead you will need to format a blank disk and copy the files individually. Don't panic, they aren't all that difficult.

ON THE ST

(assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double-click on the A: drive icon to open up the Disktool contents window.
3. Now drag the icon for drive B: into the open window of disk A. This will copy all the files one by one off the master disk to your new disk. Make sure that the master ST Amiga Format disk is write-protected (the sliding tab should be back up the hole in open) and put it in the disk drive when asked for disk B.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of swapping to do on a single drive ST disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk swaps, you can use the External RAM disk program provided on this month's disk as an intermediate step.

ON THE AMIGA

(assuming a single drive machine)

1. Start your Amiga up with your normal Workbench boot disk.
2. Take a blank disk and install it in the usual way.
3. Make sure that the master ST Amiga Format disk is write-protected and put it in the disk drive. Double-click on the disk icon that appears. Drag any icons you see in the contents window onto the 'RAM disk' icon.
4. When the disk activity light has gone out, put your newly formatted copy disk in the drive instead. Double-click on the RAM drive icon to open its window, and drag program icons from that onto the new disk icon. This copies the files one by one.

The programs may not all fit in the RAM drive at once on an A500 - do whatever will fit, then after step 3 comes them from the RAM disk by clicking once on each and, holding the right mouse button down, selecting discard from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS

ON THE ST

When you turn the ST on and put your working copy of the disk in the drive, you will see a window opened with the contents of the disk displayed.

One of the icons is called **CLICK.ME.PRG** - just do what it says, double-click to run it. Up comes a list

of the disk contents. Type the number of the program you want to run, and you are asked whether you want to read the disk help file or not.

You will now be asked whether you want to run the program or not. As an alternative to using **CLICK.ME.PRG**, if you know enough about **CLICK** you can click directly on the icons for individual programs. These normally end .PRG with their documentation files having the same names but with .DOC suffixes. Always read the documentation before running the program.

ON THE AMIGA

Most of the programs on the cover disk are run from the Workbench, which must be loaded first from your normal startup disk, as described in the Amiga manual. Once at the Workbench, put the ST Amiga Format disk in the drive and double-click on its icon to open it.

You should find on the disk at once for a program called **CLICK.ME**, do exactly what it says and after a few seconds our cover disk menu program will have loaded. If you own a single drive Amiga then your machine will prompt you to swap disks a couple of times before the menu is loaded. Just follow the on-screen requests and everything should load fine.

Most of the programs on the disk can be executed from **CLICK.ME** by selecting them from the menu and choosing either to view the program's documentation or load the program. If a program fails to load from this menu (this sometimes happens through shortage of memory or unexpanded systems), you can load it from the Workbench instead, by clicking on its icon.

To load a program from the



Workbench, you must first Click open the drawer which contains it. For detailed comments from the program's author click on the .DOC file icon in the same folder: to run the program click on the main icon.

When you click on a document file, a new window is opened and the text is displayed in a scrollable at a time. Press any key to move from one scrollable to the next, or click on the close gadget in the top left-hand corner of the window to cancel the display. The **READ.ME** icon gives you a brief summary of the disk's contents and how to use it.

HAVING TROUBLE WITH THE DISK?

We have done our best to check that the programs supplied on this month's disk are simple to use, error free and have no known viruses. However, we cannot answer telephone queries on using the software, and we do not accept liability for any consequences of using the programs.

If your ST Amiga Format disk is faulty - and out of 40,000 distributed copies are unfortunately bound to be - you should send it back for a free replacement to:

ST Amiga Format November Disk, DeCoCo Labs, 29 Oath Close, Brackmills, Northampton NN4 8QY.

AMIGA OWNERS: If your Amiga refuses to accept the disk, by using the **DISKBOOT** utility on your Commodore Workbench disk to reformat it before sending it off for a replacement, the contents **DISKBOOT** file on page 82 of issue 1. Don't worry if every track gives you a 'hard error', this is the Amiga being unable to read the ST software on the disk.

WE WANT TO GIVE YOU MONEY!

If you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know. Here's how to get about winning international fame for yourself:

1. Only send in programs on 5.25" disks, we cannot accept printed listings.
2. Make sure your disk is clearly labelled with your name and address and the program name(s), and is marked 'ST' or 'Amiga'.
3. Make sure there's a documentation file on the disk called **README**.
4. Enclose a clear covering slip explaining what the program does, and if you possibly can please also send a portrait of my device documentation file. Show your address and telephone number. Include a stamped return envelope for the disk if you want it back.
5. This is **IMPORTANT!** there must be a signed statement that the program is yours and that you are prepared to assign publication rights to ST Amiga Format, (see the following wording).

The program(s) (write the title here) is/are submitted for publication by ST Amiga Format magazine. It is my own work and has not been submitted for publication elsewhere.

Yours,

If we accept your program, we will get in touch with you before publication to agree terms and payment rates. We will evaluate all submissions in a batch once a month, so please allow up to 40 days for return of your disks. We will only send back disks with adequate return postage and packing.

If you send us a disk with a virus on it, we reserve the right to send round the heavy metal in the small hours and do unpleasant things to your gut feeling. Seriously, when we've already supplied thousands of programs in issue 11, do check your disk very carefully.



ROBOKIT ST

PHL's PROSE software has been controlling industrial robots for some time — now it's available on the ST. You won't be able to make R2D2 fetch the tea for you, but with a good Lego set you'll discover robotics isn't just for people with three brains. Richard Monteiro, with no brain, tries it out.

WE KNOW THAT!

The Robot Build mentioned in our first issue, while interesting, was an advertisement for a new range of toys. However, the range of toys mentioned in our first issue, while interesting, was an advertisement for a new range of toys. However, the range of toys mentioned in our first issue, while interesting, was an advertisement for a new range of toys.

**£79.95 ■ ST only ■
Atari, Atari House, Railway Terrace, Slough, Berkshire, SL2 5BZ (0753 33344)**

Unlike many products featured under Atari's wing, Robokit is ready and in months after being announced. It may have something to do with the fact that Personal Robots Ltd (PRL) of Hove, the chips responsible for the development and design of Robokit ST, have had an industrial version of Robokit on the go

for some years. The board and software are ready, now it's up to Atari to deliver the goods: they are responsible for production. Will it be available next month, next year or will the sky fall on our heads first? After leaving?

Bricks and walls

Robokit consists of interface, software and manual. While you can learn the theory simply by typing with the software, you will need a Lego Technic set of bricks to enjoy the practical side of robotics. Unfortunately the sets you require are expensive, since optical sensors, motors and other specialised gear are a must. To make matters worse, the kits are available only from certain educational retailers. Check out the page for more on this.

The first stage is to build yourself a credible model from Lego. If you're stuck for ideas, the first part of the manual describes over 40 steps to construction projects. Two projects are detailed: one arm, 18 operators, card reader, printer, mass arm. Whatever project you decide to undertake, the step-by-step instructions ensure you won't go wrong.

The manual was written at a time

when Lego didn't have any kits containing microswitches. Hence the Blue Peter style guide to making your own. The guide isn't absolute as only the most expensive kits now contain such patches.

Along with construction details, the manual provides data for wiring the motors, sensors and switches to the Robokit interface. Once you've got a kit connected to the interface, you're ready to roll with PROSE — for Personal Robot Operating System and Emulation.

Backdrop to the future

You'll be prompted to load an RSL file first off. RSL files are the DOS DESKTOP.MP files; they contain information on PROSE's screen layout. Unsurprisingly there aren't any RSL files with the software, so you must create them.

First you'll want to display an image (called a backdrop) to PRL of the Lego device you are driving on screen. All projects listed in the manual have accompanying image files in the disk, and very clearly they are too. If you create a model other than those listed in the manual, you'll need to design your own backdrop. Any of Segoe, Ite, MacChinor or GEM Paint can be used to create the backdrop.

The reason for having a coloured picture of the device plugged into the interface is solely to aid communication between you and the device. Items can be added to the backdrop. These range from arrows, for representing movement in particular planes, perhaps to hands for labelling at movement, Laps. None of the data means anything specific until you attach control power to them, and then they can be given any meaning you feel fit. Twenty icons exist within



ABSOLUTE MOVEMENT

Instructions to the mini arm, or whatever kit is attached, can be bundled together to form sequences. Unless special instructions are sent, all movement is relative: execution of a sequence proceeds from whatever position the previous command left the model in. Sometimes this is inconvenient and action can take place regardless of the robot's position. However, there are times when knowing the exact position of the robot or parts of its system can be of the greatest importance. Similarly, you may want movement to start from a known position. Several Robokit commands cater for absolute positioning.

These commands rely on position reports from

the robot; staff accidents on the motors take care of this.

Before you can use encoders, you must 'initiate' them. They then need calibrating, which means attaching some unit of measurement of the clicks of the encoder switches. One possible way of doing this is to place the arm or other object in the most extreme position and inform the computer of this.

You can decide what direction you want a click of the encoder to represent. When the mini arm performs a complete circle about its vertical axis, for example, the encoder clicks 36 times; you might choose 36 clicks to represent 360 (the number of degrees) in a turn.

KITS SUITABLE FOR CONTROL

Models built from Lego, Fischertechnik, Meccano, plastic, metal or brass wood may all be controlled by Robotkit. Lego is preferable as many of the kits comprise motors, solenoids and microswitches that are ideal for producing robots. You can even rig up an alarm that a remote controlled car and connect them to Robotkit.

Several Lego projects are included with the Robotkit package - these are all based around Lego components. Lego supplies some good designs with their 1990 and 1992 Technic Control Sets (which contain everything you need from basic building blocks to motors and shaft assemblies). Unfortunately these kits form part of the schools range and aren't available in shops.

'Commander' of 260 Green Street, Exeter, SN3 7UD (03-883 2061) can supply you with 1990 (L75-M7) and 1992 (M75-M75) packages along with other Lego parts. You can also approach Lego direct at Boston Rd, Weymouth, Dorset, DT12 1JG (0949 296000).

Many thanks to Commander and Lego for their help - particularly to Lego who supplied a 1992 set for use with Robotkit.



provision for adding others or even editing existing ones - a plus.

Be warned, the software only works in high or medium resolution. Medium resolution backdrops suffer from being stretched horizontally and consequently are cropped top and bottom. In other words, a head monitor is recommended. PS, point out that a scaling utility for medium res

monitors will be included with the package when available.

Captain's log

Next stage is to add commands to the code. For instance you can initiate a motor, make a motor rotate for a given amount of time in a given direction at a given speed, stop a

motor and so on. Motor number, if which there can be eight, and output port number must also be supplied. Once this information has been supplied to the system, double clicking on the appropriate icon will cause part of the Lego kit to move.

You may find that the wrong motor moves, or a motor moves in the wrong direction, or for the wrong time. But it doesn't take long before you're in full control.

Robotkit is at about editing some device yet at with repetitive tasks. Essentially these tasks are programmed sequences of instructions - something PROSE is quite capable of. Sequences of managers are recorded as by Robotkit as you issue them; they can be replayed at any time, and may be attached to icons or even other to other sequences.

These remain one last noteworthy technique offered by PROSE: input watching. This enables Robotkit to watch for certain events - a switch closing because a buggy hits something - and then act accordingly. This can be limited to BASIC's IF...THEN statement, but is more powerful: the system looks for an event every five seconds in parallel with whatever else is going on and performs the consequent action immediately.

And for you?

Robotkit Lego is widely available - although specialised components might be harder to track down - and is a relatively cheap method for building robotic models. The control software is very easy to use and is based in a proven industrial version. The manual is incident with numerous pages spent on the control kit, building models and hooking the hooked models to the interface.

For educational establishments and anyone interested in understanding the basics of robotics, Robotkit is a must. You won't be able to control a robotic lawn mower, but you'll certainly gain an insight into how these machines work.

for

- Excellent manual
- Control software is comprehensive without being difficult to use
- Features like event pending allow good simulations

against

- Lego kits to control are expensive
- Doesn't work properly yet with colour monitors

features

performance

1 2 3 4 5

ease of use

1 2 3 4 5

manuals

1 2 3 4 5

format value

1 2 3 4 5



■ The 26 icons that can be added to the backdrop. Icons can have commands attached to them which tell motors and other components to perform certain jobs. For instance, a motor can rotate in a given direction at a given speed.



■ When you click on one of these icons a message is sent to the robot. These messages can be strung together in sequences and executed in set go, hence the robot can perform numerous tasks automatically.



LOSING CONTROL

The fabled interface required for robots isn't very fancy - I didn't have a case. There were switches in the front panel for adding options privately and an empty chip socket for better motor control. Lego tried plans to lose the thing, I managed some modifications which succeeded until the machine caught fire. In the end it's a pity that a control system robot can't be used when it's not in use.





AMIGA AMIGOS

If you're an Amiga programmer, then these two utilities should make your life a lot easier.

CYGNUS ED

£75.00 ■ Amiga only ■ Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN (031-557 4242)

What is a programmer's editor? It's not someone who leans over a machine coder's shoulder and says things like, "That sorts matters subtly - write it again". Rather, it's a sort of word processor especially for programming.

A lot of users will be baffled by that, because if you only program in Amiga BASIC, you won't need a separate editor - Amiga BASIC has its own.

In all interpreted languages, the editor is an integral part of the package. In compiled languages, like C and Pascal, the difference is much more obvious because the writing and executing of the program are distinctly separate.

But virtually all languages are supplied with an editor of some description, so why consider buying an editor like CygnusEd that doesn't come with it anyway?

One, two, three

There are, in fact, three good reasons. First, many standard editors are not particularly good. Second, if you program in more than one language, chances are you're using a different editor for each. By using something like CygnusEd you can use the same editor, and the same commands, regardless of the language you're using. Third, CygnusEd is powerful enough for most word processing applications, so you may not need to spend extra money on a dedicated WP package.

CygnusEd, or CEd as it's known, is a full-blown word processor, and even a first encounter reveals some very powerful features. For example, you can have ten document windows open simultaneously, with a variety of uses for each.

So, you could have ten different documents open, or you could have several versions of the same document, or ten views of the same document. The difference between the last two ones is that with different windows of the same document, changes to one do not affect the others, while with different views of one document, any change is universal (subtle but significant).

Other key features include some powerful word processing facilities, such as a lightning fast search & replace including the unusual option of using wildcards, block cutting and pasting, lots of text formatting options and the ability to display text in columns for newspaper-style layouts.

But perhaps the most significant aspect of CygnusEd is the extent to which it allows you to set things up the way you want. Apart from choosing screen colours, there's a complete 'keyboard macro' facility. This feature allows you to have CEd emulate virtually any text editor or word processor you wish. The package comes with a complete set of macros to allow CEd to emulate MicroDraw, or you could set it up to work like Wordstar if that's what you really want.

Finally, no review of this product should pass without mention of the features that make CEd one of the most reconfiguring programs to work with. There is an extensive option which saves your work at regular intervals, should the worst happen (there's better security with a file recovery utility). If your Amiga crashes while you're editing, you can do a warm start, run RECOVERED.LIB, and CEd will retrieve from memory any files that were being worked on at the time of the crash.



■ CygnusEd working over a C program... the black bar in the middle shows the two current editing positions. In this case, we're editing two different parts of the same file at once.

for

- Highly 'customisable' and friendly
- Lightning fast - even with multiple windows open
- Fully compatible with multi-tasking AmigaOS/2

against

- Weak for advanced word processing and document design
- Although clearly written, manuals could be improved by use of sample screens

features

1 2 3 4 5

Performance

1 2 3 4 5

ease of use

1 2 3 4 5

manuals

1 2 3 4 5

format value

1 2 3 4 5

TALKING EDS

"What about EDS," some Amiga reviewers will say. EDS is the Amiga's trouble-shoot editor for writing CEd routines and the like. But since you can use it all by yourself, familiar with the limitations of 'wordwrap' text editors. Shortcuts commands and single line editing are among the biggest problems. It's not about usable for automating the startup sequence. But if EDS is good for programming, it's an absolute write-off for word processing. The only thing you can say in EDS's favor is that the price is right.



Obviously, success depends upon the relevant memory areas not being overwritten during the test, but during testing CDD managed a 100 per cent recovery record.

Too good to be true?

But despite all this power, CopyEd is not only easy to use but easy to learn. Every major function is available from well-designed drop-down menus, and there are copious key-based shortcuts for those who prefer to keep their hands on the keyboard during the editing process. Everything is simply explained in the manual,

although some sample screens would have made things even clearer.

For word processing applications, CDD is not perfect. For example, there's no built-in spelling checker, but you could use one of the many add-on packages available. Nor will it handle certain common WP functions like headers and footers or mail-merge, nor allow you to incorporate graphics into your documents.

However, for the basics of getting words onto paper, and for proof-reading applications of all kinds, it's fast, friendly and powerful. In fact, CopyEd is closer to perfect than

Peter Workick



ARPI

EXCUSE ME

The ARP AmigaDOS replacement Project was conceived by a group of top-level software developers as an attempt to rid the Amiga of its frustratingly proprietary (BCL-based) operating system by rewriting the OS library and most of AmigaDOS's components in pure-MC68000 assembly. The ARP/OS commands not only run much faster but tend to be far more friendly with extensive built-in help support.

Contributors have been offered ARP, and if they accept, ARP could well go on to become the next release of AmigaDOS.

WSHELL

£12.00 ■ Amiga only, all models ■

Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh
Dial 399 (031-557 4242)

When the Amiga was first released onto an unsuspecting public, while much of its design was then unique for a micro, the basic workhorse of the system, its disk operating system was based on a rather (sorry) OS/2 called TRMOS from Cambridge University.

AmigaDOS unfortunately inherited many annoying traits such as lack of command line history and line editing. Programmers often fled AmigaDOS's quirky BCL-written system structure more of a hindrance than a help and it is with all these points in mind that WShell was developed.

If you have used the famous public-domain console handler, ConMan, the name of William S. Hawes will already be familiar to you. WShell continues where ConMan leaves off.

For those not in the know, ConMan is an enhancement of the standard AmigaDOS CL handler which allows you to cycle through the history of previous command lines typed by pressing the up/down key, and to then edit a chosen line with the cursor keys and action it by pressing

[Enter]. Invaluable when AmigaDOS command lines can run to 80 characters - and also writing key means replacing the lot.

Alias Smith and Jones

WShell includes the latest release of ConMan, version 1.1, and offers an extensive list of new features that greatly enhance it. For example:

- **Command Aliases:** these allow you to define synonyms for regularly used commands. If you type "LIST

game, if you don't have any, don't worry.

■ **Concurrent piping:** the output of one task can be channelled to the input of another, even if the latter is parallel. This is like a concurrent version of the CL's > operator.

Many of WShell's features are inspired by the Unix environment, an increasingly popular operating system in America.

Getting up and running with WShell requires a certain amount of setting up, but thankfully all the hard work is handled by an AmigaDOS batch file that simply needs to be set in motion with the DOS command COPYW75.

The WShell manual is generally well written and fully indexed which

Features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

manuals

1 2 3 4 5

format value

1 2 3 4 5

for

- Command line history
- Some commands built-in, and can be made resident
- Comes with ARP, the 'improved' CL
- Clear manual

against

- Once Workbench 1.3 arrives, the main benefits are lost
- Some important commands missing from 'Text-to-text'

If you are determined to, WShell allows you to redefine your entire CL command using system with its alias feature. There we're begin setting up a clear headache where you type 42 instead of 200.

WASH-CL is a lot, you could set up the shorter CL to do it for you.

- **Resident Commands:** you can permanently install any command in memory so that the Amiga won't put up a disk change requester when you try and run it.
- **Built-in commands:** the AmigaDOS commands CD, CDD, F, CLS, DIR, PAUSE, PROMPT and a few other exotic directory paging commands are permanently built into memory without you even needing to ask for them to be resident. Unfortunately no DIR function is built-in.
- **There's a REXX language handler,** for compatibility with other REXX pro-

grammers. Unfortunately has become a rare sight recently. Many software companies tend to rush program documentation which can have the effect of making a program completely unusable to the average user.

Although Workbench 1.3 features an enhanced console handler called AmigaSHELL, WShell should still be considered a must for all serious CL-ers. WShell also includes the public-domain ARP (AmigaDOS Replacement Project) files. The powerful features of WShell coupled with ARP make the WShell package a recommended purchase.

Jason Bellamy



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[illegible]

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Any game not released will be sent on the day of release.

These are mail order prices only.

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LEARN BASIC

We haf Arrays of making you talk. This month it's data structures and the different types of variables that BASIC supports. Simon Williams puts numbers in them, sticks words up them and pulls them all back out (sounds horrid!)

BIG NUMBERS

To give you some idea of the size of numbers BASIC can express, the estimate for the total number of sub-atomic particles in the universe is 10^{27} , which is a lot less than the size of the largest double-precision number.

In the first part of this series we looked at variables, the boxes where numbers or letters are stored within a BASIC program. There are two main types of variable: numeric for numbers and string for everything else. There's rather more to it than this, though, as numeric variables themselves can be divided into two sub-types: integer and real.

An integer variable is one which has no fractional or decimal part. The numbers 1, 257, 356823 and -78 are all integers, but 1.5, 257.35, 356823.1234567, -58.9 and 5 1/2 are not.

A lot of the numbers you use in programming don't need any decimal part and should therefore be defined as integers. There are three reasons for this: integer arithmetic is performed much faster than floating point; it's much easier for a machine to calculate 12×3 than 12.0×3.0 ; integers remove the possibility of rounding errors. As they have no fractional part, and integers take much less space than equivalent reals.

Integers take a maximum of four

bytes each, which means that when running a program and having one which is too large to fit in memory. The variables and arrays used by a program can often take a lot more space than the program itself.

This isn't the end of it, though, as integers and reals can be subdivided again. If you don't tell BASIC otherwise, integers are 36 bit (but typed long and have a range of -32768 to 32767). If you try and assign a number larger than this to a single integer variable you'll get an error message. Power BASIC, though, not Amiga BASIC allows a second type of integer, the long integer, which takes four bytes and can represent any number from -2147483648 to 2147483647. Real numbers, in both BASICs, can have two precisions, which determine the size and accuracy of the number that can be represented. Single precision, which is the norm, can handle numbers up to 10^{38} (1E+ in Amiga BASIC) with a resolution of about 7 digits. Double precision numbers can be up to 1.8×10^{49} (which is pretty big) and are accurate to around 24 digits.

```

Number
CONST A
REAL OF JUNE
TIME AS REAL OF ENVIRONMENT
TOTAL JUNE2016

```

The last variable would be a single precision real, as this is what BASIC assumes if left to work it out for itself.

As an alternative, you can use BASIC's DEFINT statements to specify a range of real letters which automatically define a type of variable. For example, the statements:

```

DEFINT A-Z
DEFREAL F
DEFREAL G-J
DEFREAL K-N
DEFINT L

```

would define all variables beginning with A, B or C as integers, variables beginning with F as long integers, those from G to J as single precision reals, and so on. You can use any single letter, range or ranges of letters to define a particular variable type.

Know what I mean. Array?

As you know, variables can be thought of as boxes in which you store words or numbers. For a lot of purposes this is all you'll need. There are a lot of other purposes, though, when you need a co-ordinated set of data which is difficult to create with independent variables. An array solves this problem by providing a structured set of variables which can be treated as a whole or through its component parts.

Picture an array as a set of lockers, say 10 across by five high is total of 50 lockers. Into each of these lockers you can place data, and you can refer to any locker by its co-ordinates within the whole block, for example third locker along on the fifth row up.

An array can be virtually any

Marking up

You may be wondering how BASIC can distinguish between all these different types of variable? Wonder no longer, it's all done with suffixes. You've already come across one suffix used in BASIC to define string variables, the dollar sign (\$). Added to the end of a variable name tells BASIC that its contents are a string of characters. Similarly, all the numeric types have suffixes. Integers use a percent sign (%), long integers an ampersand (&), single precision reals an exclamation mark (!) - sometimes known as 'pling' and double precision a hash (#). For practice, name the following variable types:

Int, real, array

POWER BASIC
The most powerful BASIC for Amiga
Start RT Computers

types each, which means that when running a program and having one which is too large to fit in memory. The variables and arrays used by a program can often take a lot more space than the program itself.

Int, real, array



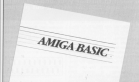
DOING IT FOR THE FIRST TIME

Using BASIC for the first time? Here's how to get the programs up and running.

Amiga BASIC first shows the computer and loads your Workbench disk into a drive. When the Workbench appears, replace the disk with the Amiga Extra/Amiga BASIC disk. An Extras disk icon will appear. Double click on this icon and wait for the contents of the disk to appear. Double click on the AmigaBASIC icon when you spot it. Amiga BASIC is now ready to use.

On the VU, insert either issue 1's cover disk or issue 2's Power BASIC disk and press the reset button. If you're using the newer disk, double click on the **CLICK ME! PBC** icon when it appears and then select the appropriate item from the menu. For the full version double click on the **POWERBASIC** icon (or **POWERBASIC** if using the 275 or 500 MHz BASIC package). You're ready to roll.

Now read the rest of the article to find out how you can create BASIC programs.



size. BASIC demands that you set them up explicitly with the DIM command. This takes the form:

DIM arrayname ()

where "arrayname" is the name of the array (governed by the same rules used in naming a "regular" variable), and "n" determines the number of locations in a row. You're not limited to a single row of locations, though, and could set up a block of them as in the example with a command like:

DIM location(115,5,4)

Note that the array name has a dollar suffix, indicating that it's a string array. Arrays take the same suffix as ordinary variables, and all elements (locations) in the array must contain the same type of data. The numbers specify a row of 15 by 5 elements. You can continue adding dimensions to the array by putting in extra commas and numbers of elements. For example, you could define a three-dimensional array to make a cube of locations with the command:

DIM location(115,5,4)

When you get above three dimensions, though, it gets a bit hard to visualize, unless you're into temporal distortions.

If you want the array to be available to subprograms as well as the main program, you must add the word **GLOBAL** to the DIM statement. For instance:

DIM arrayname location(115,5,4)

A good READ

The advantage of using arrays is that you can perform repeated calculations on numbers or strings in the locations of the array. This is most easily done with a loop, such as a **FOR...NEXT** loop (covered in issue 3) and is particularly useful when loading or printing a lot of information. The program **TELEPHONEBOOK** on the disk uses **WHILE...REPEAT** and **FOR...NEXT** loops to input up to ten names and telephone numbers into two arrays and then retrieves any number when given the name to search for.

There are two more commands which are very useful when reading into an array: **READ** and **DAT**. You can build information into your program by including it in lists after the word **DAT**, and read it into the locations of an array with the **READ** statement. Have a look at the program segment to see how it's done:

```
FOR count=1 TO 10
  DIM array(count) TO 10
  READ array(count)
  NEXT count
FOR count=10 TO 1 STEP -1
  PRINT array(count)
NEXT count
DATA 1474786, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111
DATA 1474786, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111, 11111111
```

This program defines an array, sets it to zero, and reads 10 groups of names into it with the **READ** statement. Each time a **READ** is performed the count variable is incremented so that the next **READ** fills another location. The whole process of loading the data is carried out in just three lines of BASIC, as is the second part of the program, which prints out the groups' names in reverse order. When BASIC comes across a **DAT** statement in normal program execution, it ignores the line and goes straight on to the following one. You can therefore put **DAT** statements anywhere within a program. BASIC remembers which **DAT** statements have already been read, though, and will always go to the next item with each new **READ**.

The second program, **PHONEBOOK** on the disk, shows how **TELEPHONE** could be adapted to load names and numbers from **DAT** statements. **PHONEBOOK** also uses a two-dimensional array rather than the one single dimension ones in the first program.

LISTINGS ON DISK

To complement this month's instalment on data structures we have two short programs that apply routines on the disk. They are deliberately short and simple, but it's plenty of opportunity to improve or adapt them.

To test them, use AmigaBASIC. Insert your Amiga and insert a Workbench disk. When the Workbench appears, replace the disk with the Amiga Extra disk. Double click on the Extras disk icon. AmigaBASIC will load. Go to the Program menu and select Open. Click on the Program icon and enter **PHONEBOOK**. Click on the File menu option, select the Format cover disk containing the BASIC files, type in **TELEPHONEBOOK** and press (Return). The file will load. You may run it by clicking inside the BASIC window and typing **RUN** and pressing (Return) or you could click on the Run menu option. **PHONEBOOK** will load and you'll be ready to use the second program.

Loading listings into **POWERBASIC** (those versions equipped with issue 2) will read your **BT** and place the issue 2 cover disk in the drive. Double click on the **CLICK ME! PBC** icon when it appears. (Choose **Power BASIC** if) from the menu. Power BASIC will load. The BASIC files are loaded into Power BASIC by inserting the current cover disk and selecting Load from the File menu. Double click on the **TELEPHONEBOOK** or **PHONEBOOK** file that appears in the file selector box. The chosen file will load ready for use. Some versions of these programs are also on the disk, with disk listings. These can't be loaded into the same version of Power BASIC, but you can read them with the full version of Power BASIC, or, with some modification, any other **BT BASIC**.

MARGINAL FACTS

Southwest - a South American country
Mythology - a prehistoric prehistoric
Amazilia - a butterfly
Spoken
Shade - almost always more real in the world
Antelope - animal which eats ants
Exhibition - a group exhibition
Tepee - large tent, usually in the shape of a cone
Opposite - world's largest island
Copper - large island, important for its copper and iron
Single

RESTORE

If you need to restore the data pointer back to the start of the **DAT** statements in a program, you can use the **RESTORE** command to do that. **RESTORE** can also be used to move to a label and before any **DAT** statements.

Perverted characters

When you're using ST BASIC by pressing (Control) while hitting keys on the keyboard, you'll discover an abundance of extra characters.

Philip Moore
Mickin, Harfordshire

Last word on First Word

Having trouble printing all the ST's symbols from First Word? Here's a solution, but first a paragraph of explanation.

Most printers have different character sets from the ST's. Some Brother 800s, for instance, can't even cope with printing the basic 80 and pound 80 in the same document. The problem is, as far as the printer is concerned, that both symbols occupy the same ASCII number. Your printer will print "I" for the hash symbol with the printer switched to US character set, but "I" for hash with the UK character set installed. Some printers allow you to switch character sets from software, others don't.

The solution is to edit using First Word: the printer driver for your printer and re-install it. For the 800s it is best to start on the file ASCII803 which can be found in the PRINTER folder. In the part marked "Translation table" find the line

30: # no pound sterling

and replace it with

30: 3B, 4B, 0B, 0B, 12,
7B, 7B, 7B, 4B, 0B
Pound sterling

What the two numbers mean:

0B - Alter code for pound sign.
1B, 4B - puts the printer into standard graphics mode.
0B, 0B - tells the printer to expect six columns of graphic data.
12, 7B, 0B, 0B, 0B, 0B - data marking up pound sign

Save the modified file and run the install program to create a new version of `255_FONTLOG`. Move this file into the same directory as First Word. Also make sure that the printer is set to USA character mode.

If you don't have an 800, consult your printer's manual - the printer's name. You will also have to determine how large characters are so that the graphics symbol set fits in exactly one character space. Using a similar method it should be possible to print any of the ST's peculiar character set. However, as the characters end up as graphic data,

BEGINNER'S CORNER

VIEW MENU

The third option in the menu bar is View: this lets you control the display. For instance, files can be displayed as icons or text and may be sorted in a number of ways.

Make sure you have a window with several files in it displayed as icons. Move the pointer pointer to the View option; a menu falls down. You should see a number of items - two of which have ticks in the left of them. These ticks tell you which options are currently selected. For arguments sake assume "Show as icons" and "Sort by name" are tagged like this. These options mean that files will be represented by icons and displayed in alphabetical order.

SHOW AS TEXT

When Show as Icons is selected, all files are represented as icons with their filenames beneath. Sheets of paper with a corner folded show represent data or text files and those with a solid bar at the top are programs. The third type of icon is the folder - which looks just like a folder.

To display files as text simply click on "Show as Text" from the View menu. When a file is displayed as text, the window shows the filename and size as well as the date and time the file was last modified. A small diamond icon next to a filename indicates that the file is a folder, not an application or text file.

SORT BY NAME, DATE, SIZE OR TYPE

Opening a window causes files to be ordered according to the sort option from the View menu: Name - displays files in alphabetical order.

Date - lists files chronologically, the most recently created or revised file appearing first.

Size - lists files according to the number of bytes they contain - largest first.

Type - shows files alphabetically according to their extension.



■ The View menu allows you to alter the way files are displayed on screen.



■ And again... this time files are ordered according to the extension.



■ This time files are shown as icons in alphabetical order.



■ The same files shown as text in Beta (chronological order).

affects such as bold and underline won't work.

Richard Green
Brentwood, Essex

STAC stuff

By altering system messages 9003 and 9034 you can change the colours on the top line of the screen. You can even add graphic characters or sound (look at Symon, for instance).

Certain messages and console lines on the "system" bar are not always required. Message 9032, for example, will only be used if you are loading a two-card game. Once deleted these will save a little memory, it's not extra space as also memory hungry. They can make messages look untidy and take up precious bytes. Locations with large pictures only need small textual descriptions.

Less priority commands,

which give general replies. "You can save nothing special." "You're into the net" and so on (should be added only when everything else has been tested. Try to put a general reply for as many words as possible).

AMP - "Whose left jumping fun?"
HELP - "You've lots of money."
DSG - "You can't dig here!"
D. Henderson
Liverpool, Merseyside



WORKBENCH

Enough tips to satisfy Alex Higgins on a bad day – two pages of hither-to unknown tricks about the Amiga and its software. This month David Millard from Gloucester wins £30 for his neat method of creating animations on Deluxe Paint. Could it be you next time?

Deluxe Animator?

Here's a way to get some less colourful animations of up to 30 frames using the 'colour cycling' facilities of Deluxe Paint. With adaptation, the same method could be used for any art package offering colour cycling.

For example, try making up a bouncing ball animation. This could just be a ball dropping and rising, repeating as it hits the ground. The colours that are open for you to use are numbers 3 to 32 on the palette. Select colour 3 and draw a filled circle at the top centre of the screen.

Now draw a sequence of balls of the same size falling to the bottom of the screen – the best way to do this is by picking up the first circle as a brush. Try to make the gaps between each ball bigger as they drop further down – in real life balls speed up as they drop under gravity.

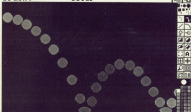
At the bottom of the balls path where it hits the ground, draw a flattened oval so if the ball was squashing as it bounced. Draw more circles to represent the ball bouncing back, making sure there are no overlaps with existing circles. You can have up to 30 objects on the screen, one of each of the last 30 colours in the palette.

For a quick preview, press the (Tab) key (above (Ctrl)) and you'll see the colours cycle – but it gets better.

Go to the palette editing menu by pressing (F1). Relative to the colours 3 to 32 as black – the best way to do this is to click on colour 32, drag its colour bar to black, click on colour 3, drag its bar to black, then you can change all the rest at once by clicking on 'Spread' (you will see the cursor change to a 'T' prompt) and then clicking on

BPaint

Color



■ The screen set up for a bouncing ball animation in Deluxe Paint (Deluxe Animator tip). All the shapes are the same except for the few positions where the ball hits the ground.

colour 32 again. This makes colours 3 to 32 an even spread of black to black in 30 discrete shades of black.

Now make colour number 32 the shade that you want your animation to be seen in – something bright to contrast with the black background is good. Check that 'C1' is highlighted in the 'Range' bar of the palette menu, click on colour 3, click on 'Range' the cursor changes to a 'T' prompt and click on colour 32.

If you don't use all 30 colours in your animation, just end the defined range of colours after the last colour you do use, and make that last colour the one which is different from the background.

Save your new palette, and you'll see that only one of your balls is visible on screen now. Press (Tab) and the whole lot should animate for you in a cyclic arrangement. What is happening is that the one colour which isn't black among colours 3 to 32 is

progressively assigned to each of the balls in the sequence in turn, giving the illusion of motion.

You can alter the speed of the animation with the 'Speed' slider on the palette menu. With a little experience you can get top-notch colour effects using this technique.

David Millard

Gloucester

■ Workbench editor adds a pop-up when trying to draw 30 objects, each the same but one palette colour on from the last, is to use Deluxe Paint's 'Cycle Draw' command. Pick up the object as a brush, from the



■ Setting up the palette for the bouncing ball. Only colours 3 to 30 are used, so the Range (marked by the white line on the palette) ends after number 29.

'Bilder' menu, choose 'Cycle'. Each time you click to paste the brush down it will reinvent the picture colour for you in sequence.

Quick draft printing

Even if you have a printer with fast button controls which allow you to select 180 ppi, 12 pitch text and so on manually, you will find that each time you print a document from your word processor, the settings are always determined by whatever was set up in your Preferences.

You could go into Preferences and change the settings, but here's a simpler method: set your printer up in the keyboard style you want, using its front panel buttons. Assuming it is connected to the Amiga via the parallel port, post your document by going to the **Printer's** Save menu and typing **on** as the filename to be saved. This sends the text directly to the parallel port, as the printer. You may find your line breaks don't come out correctly - if your application program has a 'Print to disk' option, use that instead, giving **PRN** as the disk file name again.

This should work on most printers. If you get an 'Illegal filename' message or something else for when you save to **PRN**, try saving to **PRNDUMMY** instead - that fools programs into believing it's a real filename.

Incidentally, if you're using the standard ED editor to prepare a program file, the command **on /nval/ for on /nval/** if you do want to go via the printer. Preferences settings prints your file to you without the need to set ID.

David Teigg-Hester, Germany and others

Quick CLI

If you want to get a quick CLI window, rather than booting up your Workbench and then running the CLI icon, just press **CtrlD** repeatedly as soon as the Amiga's start-up sequence gets going.

CtrlD interrupts the execution of any command file (as set up with the **EXECUTE** command) so it starts the **STARTUP-SEQUENCE** file before the Workbench can load, leaving you with the CLI '1' prompt.

What's in a name?

There's nothing special about the names the Amiga has for its CLI commands; they can be anything

you want. When you type a command like **DIR** at the CLI, the Amiga goes away and looks on the disk for a file called **DIR**. If it finds one, it runs the program in that file.

Most AmigaDOS commands are listed in the C-directory of the startup disk. So, suppose you are used to a CP/M system where the command to delete a file is **ERA** (for erase) rather than the usual **DELETE**, no problem.

Go to the CLI prompt (click on the CLI icon in the System folder of your startup disk). Type:

```
RENAME: DELETE: ERA
```

and from now on the command **DIR** will delete files for you. You can undo the change merely by reentering the file back again. The remaining trick works for any of the commands whose files are in the C or SYSTEM directories.

Coloured prompts

In the Amiga's menu you see how to change the values of text displayed on screen using **RGB** escape codes and the **ESC+O** command. The same technique can be used with the **PRCMT** command for a pleasant effect. At the CLI,

```
PRCMT: 4=0;1=0;2=0;3=0;4=0;5=0;6=0;7=0;8=0;9=0;10=0;11=0;12=0;13=0;14=0;15=0
```

the '4' escape codes in this string make your CLI prompt appear in orange text (the 'a'ESC and embedded the last, and the last four, the prompt also the number of the current task, which is normal. The 'a'ESC merely to write for the command line itself. This way you get a nice contrast between prompts and commands/responses.

Finally, here's a challenge to knowledgeable Amiga users: what is the significance of the numbers you get with each prompt after a **PRCMT** '18' or '19' or '10'... command? The first is obviously the number of the current CLI task, as usual, but the rest of the numbers seem to go on for ever, some changing others not.

Michael Seabury
Gamberley, Surrey

■ Workbench editor style: we're puzzled by the extra numbers too. It's probably a design bug in the prompt command, and you're seeing a sequence of memory locations in the task control block. One of the numbers might be the task priority, for example. Maybe you could write a complete memory editor

using only the **PRCMT** command?

Right DiRection

The **DIR** command is one of the most used CLI commands, displaying all those files invisible from the Workbench on screen.

Typing **DIR** gives you a list of files and sub-directories in the current directory. However, there are three options.

DIR OPT 1 = 'A' is for 'All'. When **DIR** lists a directory if the A option is in force the Amiga will list out all files in that directory, and all files in any sub-directories too. In other words, all files on the disk, from the current level down.

DIR OPT 2 = 'D' is for 'Directories'. This option lists only the directories, not individual filenames.

DIR OPT 3 = 'T' is for 'Interactive'. As the **DIR** command lists each file out in the current directory it pauses. Press **Enter** to carry on to the next file. **Q** to quit back to the CLI, or **DEL** to delete the file (that's typing **DEL**, not pressing the **Del** key). Typing **T** will type a text file to the screen.

These options can be combined - for instance **DIR OPT 14** will do an interactive directory of all files on the disk.

Another good tip for using **DIR** is to get the bang of letters matching. A few examples will illustrate this best:

DIR PRD - the question mark is a 'wildcard' character. This command means, 'list all files with four letters in the name beginning **PR** and ending in **D**, but the third letter can be anything at all.' Files such as **PRD**, **PRD** or **PRD** are listed if they are on the disk.

A **'#'** is used to mean 'any number of the following characters', so **#D** stands for any number of any characters.

DIR PRD#D - the command would list any files beginning with **PRD**, so **PRD.A**, **PRD.BOX**, **PRD.DOC** and plain **PRD** itself.

would all match this. (Note: **PRD#D** will find **PRD...D** files as well as directories.)

DIR #' - This just lists out everything, since **#'** matches all filenames. In fact the **DIR** command by itself lists all files, but the **#'** pattern can be useful in other commands. See **DELDIR** to delete all of your files.)

A final tip for the impatient. Getting a **DIR** listing can be a slow process, given the speed of the Amiga disk drives. If your disks are old, and the data on them is consequently very 'fragmented' (broken up into small blocks), you can speed up disk access by reformatting a fresh disk and copying all the files onto it. The files are written in sequential order creating a big disk where **DIR** can scan slightly faster. You need two disk drives really: if you have an **HD500** and they are called **D0** and **D1**, then

```
COPY D0:0 TO D1:0 ALL
```

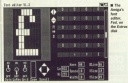
copies all the files and directories for you from the disk in the internal drive to the external drive.

David Teigg-Hester
Grosau, Germany

Free fonts

Fancy some extra fonts for use with **ED**? Boot up with 'The Very First' file, the guided tour disk provided with **AmigaDOS**. As soon as the AmigaDOS window appears, tap **CtrlD** a few times to break into it and get a '1' prompt. Now **LOAD** and then **CTRLC**. Now put your 'Extra' disk into the drive and run the font editor in the tools drawer. Fed, replacing 'The Very First' disk when prompted, you can now load the new fonts as that disk lists the Prompt menu as the file list and ensure them to a different disk. It is best to save them to the 'Tools' directory of the disk you usually start up with. Then any program, you can will be able to read the new fonts.

Alan Tucker
Leicester





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GOLD DUST

Yo, Uncle Sam! What's with the brain drain from Atari US? Why is everyone resigning? And why is the Amiga A2000 a turkey to PC users? Steve Gold posts another monthly despatch on the American

First details of Atari's new 1050 for the ST series have now been released. The developer's version of 1050 comes supplied as disk, but despite my enthusiastic comments in last month's column, it now looks like it'll be the beginning of 1989 before we see the new 1050 available on the side of the Atari.

The product failed to be well worth waiting for, however. First on the scene for most users is the provision of a hard disk cache utility that should speed disk operation up a good deal.

The bad news is that the Amiga ST ecosystem with 486 seems to be causing problems with beta test versions of the new 1050. This appears to be due to

you, if using PC-style commands to adjust the machine is a fair taste of things to come with the new 1050, some ST users might be considering it as a retrograde step!

Going, gone

Talking of retrograde steps, sources in the US suggest that the 68030 add-in unit for the ST, currently still under development, it may yet lose the right of day as a separate module is not capable of multi-tasking.

Since the primary reason for using a 68030 microprocessor on other machines and workstations is due to the chip's three power and capacity for multi-tasking, this has to be a module to drop.

There's to mistake, however, as reports that Neil Harris, top technical guru with Atari for the past four years, has now left the company. Neil left a sad message on several online systems in the US during late September, telling everyone that he'd had enough of the company.

Reports suggest he had just two hours to clear his desk and vacate the building after he tendered his resignation. The good news is that Neil has joined Genie, the Washington-based online service, to act as a technical adviser for Amiga and ST online services.

Gone too is Jim Eusemberg, one of the few people who worked on the design of the ST. Details of Eusemberg's departure from the company, and his whereabouts today, have not been published.

Virus news

Things are pretty quiet on the Amiga front this month, with little real development from Commodore itself. The addition, and Amiga-related third parties, continue to provide the Amiga user base with some interesting

products, however.

Computer magazine's Israeli division has just released a book called *Computer Viruses*. The \$14.95 book details most known viruses on the Amiga, as well as on a number of other machines like the Atari ST included.

Unlike other books on the subject, however, *Computer Viruses* contains technical information on how the viruses attack the Amiga's operating system, and simple steps to prevent a virus taking hold on your machine, as well as sources of virus protection packages.

Computer Viruses is written by Ralph Roberts, the author of Computer's *Using Turbo Pascal* and *Using Microsoft Sprint*. Computer

A dodo, Actually

Back on the Amiga hardware front, sources on *Computer's* suggest that the long-awaited 68030 Amiga board for the Amiga may be out in its final form by the end of the year. The bad news is that, according to those online Amiga users who've seen the board, it's going to be very expensive.

Several members of the *Computer's* Amiga Developer's US advise have been waiting patiently for the 68030 compatible Amiga board have now given up on waiting, and bought an 68030-based PC for around the £200 mark.

Since both machines can be linked using a 20-way serial cable, this may be a cheaper option than going for the Amiga plug-in card. The attraction of the Amiga 2000 as a PC stand-in seems to be wearing in the US. I wonder how many Amiga 2000s have been sold in the UK to potential PC users - not many, I suspect.

■ *'Gold Dust'* is compiled from the US online services by Steve Gold, a freelance journalist specialising in computer communications. E-mail, industry tips and comments are welcomed on *Freelance Gold* 737 MA2068 or via the US E-mail addresses: *Computer's* 76001, 1105, 50003 (BBS & CRL) and the Source on F0005.



the new operating system allowing programs to access system RAM slightly higher than 4MB, with the result that all the important machine crashes.

The good news is that the new 1050's features are a great improvement on existing versions. Major improvements include: better compatibility with IBM PC disk formats (watch out for some new PC emulation packages for the ST in '89); IBM programs can now be substituted from disk, and the tapping into a single floppy system too can all available memory for buffer purposes.

Taking of PC compatibility, the new 1050 allows a soft-seat of the ST to be carried out using (as generated in a Comlink 68) (Serial) key combination. Most



Users should be available from expert bookshelves in the UK. Order using the book's ISBN number 0-947456-178-1. In case of difficulty, call 0001-704 214 (NY) or write to Ralph Roberts, PC Box 8414, Raleigh, NC 27614 in the US.

HAMMING IT UP

For those Amiga users who are Radio Amateurs, the Amiga User's Club has opened up the business on *Computer's* Amiga Developer's (space) channel group 2580. The club has more than 210 members at the time of writing, including Amiga users from 14 countries, many of them in Europe.

In the UK, Bob Whitehead G3RMA, of Oxfordshire, South Western, Winchester SO3 3DT is maintaining a US database of information on using the Amiga in tandem with a radio transmitter. Bob has joined a US Amiga Radio Newsletter - it's worth contacting him direct, if you're into packet radio on your Amiga.



FORMAT LETTERS

What an organised lot you are. Questions numbered one to ten in nearly every letter. No matter, keep them coming to: **FORMAT LETTERS, 81 AMIGA FORMAT, 4 QUEEN STREET, BATH BA1 1EJ.**

Benchmark low marks

Various benchmarks were included in the September and October 1988 issues of *ST/Amiga Format* which may have misled your readers, and we would be grateful for some space to discuss these benchmarks.

The benchmarks on page 24 of the September issue have given our files; two of the file handling benchmarks printed 'fast' before opening the files, then printed it afterwards, and the same two printed 'too' after the files were closed, the other three printing it before the close. This meant that the times were under on ST BASIC and GFA BASIC since files were no consideration as to when files started and when it stopped. Some languages may read in most of the file on the OPEN while others may even postpone the OPEN until the first READ or WRITE, meaning that you should always start timing before the OPEN and stop timing after the CLOSE. Incidentally, Power BASIC runs this benchmark, with the timings outside the OPEN, CLOSE, is 76%, with a compile time to do of 15s limited to memory or RAM disk) and a code size of 9.9k. Letter C is so fast because it uses macros.

Regarding the PicoLocation benchmark used on page 32 of the May BASIC issue in the October issue and in the September issue, the expression `DO WHILE <1000000` is treated differently in various BASICs. In a modern Microsoft-compatible BASIC (like Power BASIC) the evaluation of `<1000000` is done using double-precision (32-digit) arithmetic since this is necessary for full accuracy when comparing a single-precision real with a long integer. This involves conversion of both `<10` and `1000000` to double-precision numbers and a relatively slow comparison operation. In

contrast, GFA BASIC uses 32-digit arithmetic throughout since this is all that it has at its disposal.

Thus, you can dramatically speed up Power BASIC's performance on this benchmark by simply forcing a single-precision comparison with `DO WHILE <1000000#` (the # forces 1000000 to single-precision which is what we want because we are using integers and don't care about great accuracy). When this change is made the timing for Power BASIC comes down from 24s to 10s while GFA's time remains the same.

Benchmarks are always controversial but a least try to compare like with like and make them as similar as possible under all languages. Interested readers may wish to log on to CIL and read some of the PCW/Benchmarks conference which is very informative but somewhat lengthy.

Thanks for a useful and informative magazine but please, please try to be consistent, show us and bar with benchmarks in future.

**David Link
Hilco
Bedford**

■ It's a bit odd, G... at least your first point concerning file handling. Unfortunately different members of staff set up and ran our benchmarks on the various computers. There's no reason for missing the discrepancies between the timings, though.

Your second point, regarding the precision of comparative tests, is interesting but we feel our test of the exact same loop structure across all dialects of the language is valid. How a particular implementation handles variables internally is really not of concern to most programmers. While we accept that Power BASIC may well be more accurate than,

say GFA, in this case, we were testing the speed of execution, not the precision. Your point would have more weight if attention to the use of `#` to force single-precision comparison and hence increase the speed of execution was included in a 'hints and tips' section of your otherwise high-grade manual.

Book case

I have a small shelf set up and the last acquisition was *Tipcast: Function 32 for the Roland MT32*. I was very disappointed with the difficulty of actually using it in a practical way. This was entirely due to some basic errors in the manual. I spent an enormous amount of time trying to come to terms with it and eventually wrote the enclosed letter to Tipcast.

I pretty well expected to enjoy and that's exactly what I got. Perhaps the tone of my letter should have been a little softer but I don't honestly think it would have made any difference and the facts as stated are correct. It would be so easy for them to rewrite, with one or two important additions, which would make a huge difference to the new user. As it is, I have completely given up attempting to use *Tipcast* and this is a great shame because I think it is probably capable of doing anything that could be required of it.

I use mine on an Atari 520. The most valuable information would include practical advice on how to connect everything together in a usable system. It seems to me that at some point it might be necessary to unplug some MIDI connections with the units still turned on, which is definitely not a good idea. It would be interesting to see if there is an easy way out of that.

I might add that the problem of manual writers being incapable

of envisaging the difficulties of new users is amazingly common and is easily solved by letting such a new user rewrite the manual.

**J.A.Trott
Calden
Co Llanduderry
N. Ireland**

■ This letter, of which only a section is reproduced here, highlights a common problem with all kinds of software and hardware. It is certainly true that many companies leave the documentation of their products in a late stage in the manufacturing and are then surprised when the manuals are criticised as being 'written'.

In the software and hardware companies' defence, though, a manual which is accessible to the first-time user and to the seasoned enthusiast is a rare animal to be like a three-headed armadillo, but not as easy on the eye. It's a pity more companies can't afford to employ professional writers for their manuals, as they employ professional programmers for their programs. Perhaps *Tipcast* would like to comment on Mr Trott's particular problems.

Bridgeboard of sighs

I have an Amiga 2000 with 1Mb RAM, two internal 3" disk drives, and the A2088 Bridgeboard. What do I need in order to be able to load and run BMFPC AT programs on the A2000 3.5" internal disk drive, device 01, and save/load the data on the Bridgeboard's 5.25" disk drive, device A1, such as being able to put an IBM 5.5" disk with the Novellware word processor program on it into 01, run the program, and then save/load the document on the Bridgeboard's 5.25" disk drive. Any how can I copy IBM 5.25" files back and forth between the



A pirate speaks

I thought I would write to put the definitive argument for software "piracy." Firstly, the mistake many program swappers make is giving ground to the antiquary whingers. We all know the argument about debasing the software industry (yawn). There is only one word for that: "banal." Therefore, a company's size is large or small size, the incentive is the same - PROFIT. My incentive is as justifiable, I also want to profit by my activities. When things are looked at from my point of view, it can be shown that I have the more valid and ethical arguments. Once again, before the whingers pitch in, I am an ethical individual, I recognise right and wrong when I see it, not when I'm told to see it.

My needs are more important than some faceless fat cat sitting around waiting for the profit/whingers to come pouring in. To be honest, I do not give a toss how much time or effort he/she puts into their product. Do they care how little money I earn and how little I can afford their inflated prices.

You may think that this is just the selfish comment of a drugstore ***** If so then I write that, what you are building up a righteous indignation, try to extend your indignation to cover more than the superficial arguments created by the computer media. I believe they have a vested interest in the high price of products, for do they not also gain by the increased expenditure of glossy (and unnecessary) adverts?

Frank Boddy
Hull

■ Despite all your rhetoric, I can't see any 'definitive argument'. Your main point seems to be that the software companies/authors earn a lot more than you. Perhaps if you took the time to acquire the skills and put in the effort that's needed to write a piece of commercial software, you would appreciate how few fat cats there are around. That's it that, whether it's software. Tis or cars, and no amount of whinging is going to change that fact.



You should not tell the computer that but...
"of course, that is obvious!"

Amiga's CFI drive and the Bridgeboard's 5.25" drive? I've tried setting up a virtual drive on CFI, but to no avail.
Mark Goodrich
RAF Eastwicks
Bath

■ I've been trying to obtain a Bridgeboard from Commodore to review for something over three months, now, so our reply will of necessity be based on what we imagine to be the case. Assuming the Bridgeboard will through the hardware of the Amiga, there should be no problem in saving test files to the internal drive, though they will be saved in AmigaOS format rather

than MS-DOS. As far as we understand it, the Bridgeboard can't cope with writing to the internal drive in MS-DOS format due to the multibooting requirements of the machine.

I can't get no satisfaction

I have an ST FM (the old type with a half megabyte drive). I got it for Christmas last year believing that for a bargain price of £299 I had got a fantastic computer that I could learn BASIC on without the fear of a better computer for at least a couple of years. In reality I had bought £280 worth of con-

puter with a language disk with just a running guide.

At first I was annoyed at not getting a programming book, but soon I was forced to buy one for £15.95. It was then I discovered how slow and useless Alan BASIC is. I just couldn't do anything with it and soon gave up. My parents seeing my depression went out and brought fast BASIC for £49.95, but this got confused in transit. I even joined their son's club, but it didn't help much. Now after 9 months I have about 7 games, am almost bankrupt but still don't understand any form of BASIC and to make it worse still, what do Atari go and do, they put a 1 thing down in a new ST and I hear that Alan are going to drop their price back to £299. I'm pig sick Alan carried out and thousands of others into buying their computer, and now we have been misled in the back. I'm now considering selling my ST etc (at a big loss) to buy an Amiga but I've been saving for ages, and how can I be sure that Commodore won't do the same as Atari?

We all for improving computers but why can't computer companies do a deal with owners of their products, or to replace outdated systems or to offer discounted updating of existing computers. I know it is said that this is impractical or rather said to be, but why should people like myself be sold down the river by Alan but we have been OK, you might say that the situation isn't as bad as I make out but how long before enough new STs are sold before software firms switch to making games to take advantage of the 1 mb drive. And OK so computer companies are out to make a profit but not of those profits can't they at least play fair with existing owners.

Darren Beck
"Hilling"
Kent

■ I really can't see why you're pig sick. You still have a very decent computer with a good BASIC. You can't really blame Atari and Computer Concepts for your difficulties learning to program. Have you followed our Learn BASIC series - that's a third volume for you.

It really is unreasonable to expect Atari, or any other computer company, to provide all existing users with upgrade paths when they release new versions of their hardware. You wouldn't expect to have your VHS, TV or stereo upgraded, so why are you so special about a micro? You can get a double-sided drive fitted to an ST - ask your dealer.

Software companies are also in business to make money, so it'll be a long time before they abandon the single-sided format still used by the majority of STs.

The right connection

I am the proud owner of an Atari 520SEPM and am desperately trying to find out how to plug my computer into my amplifier of my hi-fi system. Please could you help me?

Wayne Harris
Gates

■ You need a product called Monitor Master, available from Saff's very own, dear Barn Computer Shack 0205 310280 at £25. This provides separate phone outputs for connection to an amplifier, and also lets you switch between two monitors. If this is too expensive, see how it's cheating, which means how to fiddle two wires out of the monitor socket and connect them straight into a speaker.

Boring questions

Today was incredibly boring (well at least this bit is anyway) so I decided to write to an intelligent informative incredibly good magazine. Guess what, I wrote to you instead.

When I discuss boringness now, since I am a simple, boring person, I will ask simple boring questions:

1. Can you connect the ST straight into the telly?
2. Howabout about two deals of the ST and what are its other games with it?
3. Why can't I think of another question?
4. Is a mouse that useful?
5. Does the Laserbeam 4-player extension work with just 2 joystick plugged in?

Raymond
Limerick
Eps

- 1. Any ST model with FM after its number includes a modulator and can be plugged directly into a TV.
2. The 520SE is currently available in two guises - on its own for £299 or with a selection of 32 games and an 'organiser' GEM program for £399. The games are:
- Marble Madness
Tutl Drive
Beyond the Ice Palace
Buggy Bix
LORD Edwards Super Ski
Run Warriors
Thundercats



Barataria
Zynaps
Quadrant
Stargate
Chopper 4
Roadwar
Amor

Advanced 4
Witch
Black Lamp
Genesis
Thrust
Second Star
Summer Olympic
Return to Genesis
3. I tell you no.
4. Yes, if you ever do any draw-
ing, painting or C/P.
5. Yes.

Bias tracking

In your first three issues, out of 25 games reviewed, you have managed to find 5 that are Amiga only and only 2 that are ST only. This amounts to some 21%, and as you well know, is totally unrepresentative. So far, you haven't reviewed a single game of the increasing number that are now ST cleaner than the Amiga. You've misinformed at about around 1 - it's not coming out on the Amiga and would have

been ST cleaner anyway, not 11/10 as you stated, the official advert was only 2 pages away from your review!

If it's your intention to promote the Amiga and belittle the ST, there's no need to be so dishonest. If you think ST games will be happy with this misrepresentation you are really mistaken.

I read the majority of the computer press and all the independent sources I've seen say there are at least 125,000 ST's and about 25,000 Amiga's in this country. Who's your independent source, a jealous Amiga dealer?

If you continue to bend over backwards to appease Amiga dealers you'll surely lose all your ST customers. By trying to take the truth you are doing nobody any good especially yourselves.

**AL Lattimore
Hawth**

■ Oh, come on, Don't be so petty. Every magazine makes the occasional pricing mistake, and according to my information Advanced 2 will come out on the Amiga. More and more game companies are releasing ST and Amiga games at the same price, which is what's reflected in the

No balls

Why is our other national game, cricket, so rarely implemented on a computer and these days not at all? I remember about three versions written for the Spectrum, all pretty dry with the grudging exception of CRI's first Match, both in graphics and gameplay, and these days quite unacceptable. One can only imagine what 16 bits and half a megabyte could do for a cricket simulation. In fact, it might turn out to be the only way to beat the field trials.

There must be a programmer out there who is, also a cricket fan (where is he/she), for the love of Blithem! I cannot believe that a decent cricket game would not be greeted with wild enthusiasm by British ST and Amiga gamers. The basic rules and structure of cricket would translate easily enough to computer code. CRI's plus compared to Center Command, surely?

Although integrating a credible graphics with realistic graphics might prove tricky. So please, you software houses, fill this glaring gap in the 16 bit marketplace and restore our national pride at the same time. Failing this, all readers should write to their MP or this magazine.

**R Alexander
London**

■ Please make that your MP and NOT this magazine.



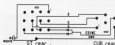
For the love of Blithem! I cannot believe that a decent cricket game would not be greeted with wild enthusiasm by British ST and Amiga gamers.



Figure 1-Digital RGB



Figure 2-Analog RGB



Join the Cub

After having read your reply to Mr. Deitch's letter in the September issue of your incredible magazine I thought that I must point out that I, like Mr. Deitch, upgraded from a BBC to an ST and, not being able to afford another monitor, decided to use my Microdot Cub. After much experimentation and hard fingers, I found that it is possible to convert a standard TTL input Cub into an analog input.

All that is needed is to remove the back of the monitor. On the left hand side of the case near the back is a row of pins which should look like those in Figure 1. Moving these to the positions in Figure 2 will make the monitor accept analog input. As for the cable on the Atari, I simply use the HFI that I used for my BBC's. Most 900 which gives adequate output (40 ohm) the pin connectors for the Atari monitor connector are also shown. 13 pin DIN connectors for the Atari monitor can be obtained from MOEX, 25 Queensbury Station Parade, Edgware, Middlesex HA8 1NR.

**J Heath
Bucks**

■ Microdot say that this modification is possible with most models of their Cub range of monitors, though any early models (before 1985/86) may not have the pins available. Look for a serial board labelled 0008003 and for plug PL100. This is the link described by Mr Heath.

review. You believe whatever sales figures you want, but your Amiga figure is way low.

Speech, speech

Could you please suggest a good (but not too expensive) accelerator for the ST, and a good (but not too expensive) sprite designer which is compatible. Also, as a point of interest, on the BBC '97 there was a very good speech synthesis program running in the machine's OS. It makes you wonder why no ST games have such a feature, using the amount of memory which is often left unused - it would make an ST version of Microsoft's Blithem just the same as the Amiga.

**James Broad
Oxford**

■ HiSoft's Speech ST and 8-Gene

from Burns, among others, are good accelerators at modest prices. Superior Software's Speech program for the BBC Blithem, which you mention, is really not in the same league as that used in Microsoft's Blithem. You can understand the one in Microsoft, for a start.

Simple soul

I do like your mag and I am forever picking it up. One thing I find a bit annoying though is you write your mag as though everyone knows what you are talking about, you haven't made much allowance for the complete beginner like myself. Even the manual which came with the Amiga was of very little help. I bought the manual of the C64 and had enough to tell this one to help and annoy, as this



Mail order mayhem

The reason I am writing to you is to complain about a software mail order company and the situation in which I find myself.

I have ordered an Atari ST for almost a year now and have been thoroughly pleased with the computer. Like most users of 16-bit computers I feel the price of software rather high, particularly in comparison to 8-bit computers. I tend to buy software by mail order from adverts in computer magazines. I feel these stores provide an essential service at, not only do they provide software at a reduced price, but also make buying programs easy for those amongst us who may be disabled, or live in a small community and do not have access to computer stores. This made me to write with my own problem.

In October 1987 I gave a review for the game *Renegade* by Imagine in a computer magazine which heavily recommended the game. Also in the magazine was an advert for Mailbox at PO Box 589 London W15 6UL in which the Atari ST version of *Renegade* was on offer for £13.95. On the 28th October 1987 I sent off an order to Mailbox, enclosing a cheque for £13.95, dated 28th October 1987 and made payable to Mailbox. In mid November 1987 I received a bank statement showing that the above mentioned cheque had been cashed and cleared on 26 November 1987. I then sat and waited.

By March 1988 I was getting tired of waiting so I wrote to Mailbox asking for a refund. I received no reply to that letter but decided to wait a while longer.

In early August I became aware that the Atari ST version of *Renegade* was in general sale, so expected to receive my copy at any moment. By 18th August I had still heard nothing, so decided to write to them asking either for a full refund, a copy of *Renegade* or for them to contact me and explain why they had not contacted me sooner.

At this time I have still heard nothing from Mailbox, so I am writing to you for advice. I have copies of the letters written to Mailbox and also have both the cheque book stub and the bank statement showing when the cheque was cashed.

John Bell
Mail

■ You really have left it an awfully long time before taking any action. Mail order companies are bound by law to display a full address in magazine advertisements, not just a PO box number, or the company looks suspect. As they're obliged to reply to a series of letters, and presumably you have no telephone number for them, your only other recourse is an approach to the magazine concerned who may be able to furnish more details. There are many suppliers more likely to fall than Mailbox, any of whom would be likely to have copies of *Renegade*.



"A cheque made payable to me has been cashed but I have not heard from the bank since our first letter to it."

was my first disk drive on the 486D1 I feel that I need some help. So now, here are a few questions that I need help with. I will be getting my new 486D1 soon so I want to be ready for it.

1. If you write your own program and transfer it to disk, if the disk is only half full, how do you record onto the disk after the first program?

2. I received the golf game *Leader Board* with my 486D1. The instructions I had said to load my 'Kickstart' and then the game. I didn't get anything called a 'Kickstart' and even with the *Workbench* I still couldn't load the game. In fact, it said somewhere to initialize the game. I did as directed by the 486D1 and blanked my master disk before I had the chance to copy it.

3. I had great trouble trying to copy my first disks, in fact, I couldn't. The computer beeped that it couldn't read, it was because they are for ST and Amiga! I had no trouble just loading the disk but I had trouble trying to run *Vilms* from disk 2. In fact, I couldn't run it.

4. I tried to run 'Disk Doctor' not for any particular reason, but the disk didn't know what I was talking about.

5. What do you mean when you say 'Boot Out'?

6. Is there a decent book that I could purchase that would help a fairly lay person? And a book with some sample programs that I could type in so as to give me some idea what a program looks like.

I would appreciate your help with these problems. Please continue with your paper mag and good luck for a long and successful publication.

Mr M Bell
Brentwood

■ We do try and cater for all levels of experience within *Personal*. Perhaps those answers will help. 1. You're still thinking in cassette mode. Disk drives store data all over the disk's surface. You don't have to worry about where the file is physically recorded - that's all handled by the disk operating system.

2. *Kickstart* is a program which is stored in ROM on an 486D1, so you wouldn't worry about loading it - it's already there. *Leader Board* starts without loading anything. You use it as you would your *Workbench* disk.

3. You won't be able to copy all the files from the cover disk in one go, due to the special file set, but you should have no trouble copying file by file. Follow the

instructions in the Disk Extra section of the magazine.

4. *Disk Doctor* is a file on the *Workbench* disk, but can only be operated from the C:) not the *Workbench* own version. (Unless your Amiga suggests running *Disk Doctor* from a formatted disk, it's safest not to use it.)

5. The term is normally 'boot up' and simply means to start up your computer in the normal way.

6. Amiga specific books are fairly thin on the ground, but you could try 'The Amiga System' available from Precision Software 01-330 7444.

PD?

At present, I am attempting to set up a Public Domain software library for the Atari ST and was wondering whether the ST part of your cover disk may be distributed as PD. Full acknowledgment of my magazine would be included on the disk. If you wish it could be offered as a shareware disk.

Also might I suggest that you devote a page or two to reviews on Public Domain software and suppliers. This could also include inviting suppliers to prepare a file of their catalogues for the cover disk.

Thomas Van Veenendaal
London

■ Anything marked as 'public domain' on the Disk Extra pages can be freely redistributed. However, increasingly the ST part of the cover disk is mostly copyrighted to the readers who have written the programs and sent them in. If you have any specific requests for permission, send them to us and we will pass them on to the authors. We do regular PD updates in *Personal*.

1000 and 1.1

You cannot guarantee that your new disks will run on Amiga 4100, you see. So perhaps I can help you by advising that they should be no problem if 4100D owners run v1.2 of *Kickstart* and *Workbench*. Both these are on disk with the 4100D, which has no *Kickstart* in ROM, so it is possible to upgrade from the previous 1.1 supplied with new 4000D. And of course, it will be easier for 4100D owners, like myself, to upgrade soon to 1.3 version!

Michael Kingston
Bristol

■ They should be available from Commodore dealers as well as from the other versions are freely released.

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Call that a boomerang?

This is either the best of a speed, or the Aussies really are as macho and fun-loving as Paul Hogan would have us believe. And when the last 20 years of any time have almost convinced us of the average Australian's thirst for cat law and the four things in life, Boomerang bounces back with all the old certified hot explosive jokes that should have gone out for the legends on Bondi beach.

The game is based around a Roshon - style update wandering round the suburbs of Sydney boomerang off the south of the leg

city with a boomerang. Sounds plausible? Well the program is actually designed to teach basic geometry, as before you swing your arm at the muggers you have to determine the slope and intercept of the straight line that will connect the two. If this is not enough, our hero often loses his "brawn" and "bore the crowd" periodically.

The game comes complete with catalogues and order forms for boomerangs and bank help. Costs an optional extra.

Disk Virus?

Faced it would appear that some copies of ST Rings Format went out last month with a virus on the disk. No, sorry, not a virus, the Virus. A few puzzled readers, not quite knowing whether to believe their luck, rang in to report that their cover disk appeared to contain a complete version of the then-unreleased Amiga version of Firebird's Virus, the game that topped the ST charts.

If only it was deliberate it'd be a great marketing ploy - Every month we're giving away a free complete game, but you won't know whether your copy has got one until you try it! No, it seems that Firebird and Format share the same disk distributors, and a very fine reproduction sample of Virus got mixed up with the Format cover disk sets.

If you have Virus and you'd rather have the Format cover disk (disappointment!) Of course you would, just return it to McGuffin Ltd. at the address given on the back of this month's disk card.

Show Me

The 1988 PC Show cost more than that ever to set when less new product than usual. The Photo Organizer, instead of Marks and Spencer stock-checkers and yappers with 960 pockets, was there in force. The tie up with M & S obviously goes deeper than at first imagined. Judging by their stand (pictured), it seems a deal has secured many hundreds of the fat calculators, against a job lot of used trousers and the roughest jump suits ever used by the clothing multiple.

Not content with stores lugging from every corner of their island, Marks chased one of their innovations to a table opposite the tube station and ordered ten to look busy with one of their laptops for the day. Judging by this shot, he failed fairly early on. "Hello 'loaf" jokes were not appreciated.



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